24.

Van: @rivm.nl]
Verzonden: dinsdag 8 december 2015 7:56
Aan: - DGMI;
Onderwerp: Fw: Regulation (EU) No 1272/2013 of 6 December 2013 amends Annex XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on REACH as regards Polycyclic Aromatic Hydrocarbons
Bijlagen: European Commission Reach Regulation 151207.pdf

RIVM, Centre for Safety of Substances and Products
P.O. Box 1, 3720 BA Bilthoven
The Netherlands
tel
email: @rivm.nl

----- Forwarded by RIVM/NL on 12/08/2015 07:55 AM -----

From: @SekisuiAlveo.com>
To: @rivm.nl
Cc: >, @SekisuiAlveo.com>
Date: 12/07/2015 06:05 PM
Subject: Fwd: Regulation (EU) No 1272/2013 of 6 December 2013 amends Annex XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on REACH as regards Polycyclic Aromatic Hydrocarbons

Attached het commentaar van dat ik vandaag naar de Europese Commissie heb gestuurd.

Ik zou het fijn vinden als je mij op de hoogte kunt houden van het verdere verloop. Is er reeds een datum bekend wanneer de volgende meeting van de Commissie gaat plaatsvinden?

Alvast bedankt voor de terugkoppeling.

Met vriendelijke groet,

>>> 7.12.2015 18:01 >>>
Dear

As mentioned by my colleague in the underneath email, we as Sekisui Alveo would like to give our comments to the interpretation of entry 50 of annex XVII to REACH.
You can find our comments and input in the attachment.

I am looking forward to your feedback and the outcome of the next meeting of the European Commission.

With best regards,

Sekisui Alveo BV
Montageweg 6
P.O. Box 292
NL 6040 AG Roermond
Tel:
Mobile:
Email: @SekisuiAlveo.com
>>> 30-11-2015 18:38 >>>

Dear
In an email we received on November 18th we got the information explaining the outcome from a closed session on November 12th of the European Commission.
In the session the amendment (*Regulation (EU) No 1272/2013 of 6 December 2013 amends Annex XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on REACH as regards Polycyclic Aromatic Hydrocarbons)* was discussed and you were participating in.
This Amendment describes that articles shall not be placed on the market if any of their rubber components contain more than 1 mg/kg of any of the listed PAHs.
These limits are valid if the rubber component comes into direct as well as prolonged or short-term repetitive contact with the human skin. For Toys the limit is even
further decreased to 0.5 mg/kg. This Amendment shall apply already from 27 December 2015.
The outcome of the closed session from November 12th is communicated in the Netherlands through the VACO (trade organization for the tire and wheel industry in Netherlands)
and RIVM. In the email we were informed that we had officially till end November to send our objection.
In my role as chairman of the ESTO (European Synthetic Turf Organization) shockpad working group we tried the last months to get clear information for our members about
the consequences of this Amendment. After receiving the email at November 18th we have clear questions marks about the outcome of the meeting November 12th.
We have tried to gather information to back up our official objection before the end of November; unfortunately we need a few more days to send you our final input.

We will get back at you within a few days

With kind regards

E-mail @SekisuiAlveo.com

SEKISUI ALVEO (Benelux) BV
Gutenbergweg 1 I NL-4104 BA Culemborg
Tel. **Fax** | **GSM** | **Skype**
ALVEOSPORT

SEKISUI | ALVEO
INNOVATION IN FOAM

From: [redacted]
Application Development Manager
Sekisui Alveo BV

To: [redacted]

Date: 7 December 2015

Subject: Comments Sekisui Alveo on CACS/40/2015
"Interpretation of entry 50 of annex XVII to REACH"

Dear [redacted] and Mr. [redacted]

1. Introduction Sekisui Alveo

Sekisui Alveo is designing and producing underlay foams for synthetic turf systems for over a quarter century. Collaborating closely with synthetic turf manufacturers and system designers, it has developed shockpads which are recognized in the market as Alveosport. Alveosport not only conforms to criteria of certification bodies like FIFA and local Football Associations, but it also meets the requirements and expectations of players, soccer clubs, installers, and owners. Artificial turf installers, owners, players and the general public expect high quality, the best total cost of ownership and do expect good environmental performance and safe systems with respect to human health.

As a responsible company, Sekisui Alveo is committed to environmental stewardship and social responsibility. We fully support REACH as an important and responsible program for controlling harmful substances in the manufacturing chain. Together with our partners, like synthetic turf manufactures and producers of performance infill, we contribute in the development of synthetic turf systems which are safe for humans and the environment.

Since the announcement of the;

Regulation (EU) No 1272/2013 of 6 December 2013 amends Annex XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on REACH as regards Polycyclic Aromatic Hydrocarbons

in December 2013, we contribute in the development of systems, together with our partners and customers, which comply with the new limits imposed by this REACH regulation.

2. Interpretation of entry 50 of annex XVII to REACH; rubber infill being classified as an article or a mixture?

November 18th we received an email explaining the outcome from a closed session of the European Commission, organized on November 12th, in were the above mentioned amendment was discussed. The outcome of this meeting is communicated in the Netherlands through the RIVM and VACO (trade organization for the tire and wheel industry in the Netherlands).

In this communication it is explained that the European Commission argues that rubber infill materials, used in synthetic turf pitches, should be considered as a Mixture and not as an Article. It is judged that the classification is comparable to the classification of granules and pellets used for plastic materials. The consequence is that Mixtures are not part of the above mentioned Regulation and therefore are not affected by the entry 50 of annex XVII to REACH.

Sekisui Alveo contacted the RIVM in order to obtain more information relating to the classification of rubber infill by the European Commission. Based on the discussion with the RIVM and analyses executed by several experts within the industry, we came to the conclusion that rubber performance infill, which is used in synthetic turf pitches, clearly has to be classified as Article.

According to the ECHA "Guidance on requirements for substances in articles" (http://echa.europa.eu/documents/10162/13632/articles_en.pdf) we can conclude as follows:

Deciding whether an object is an article or not, figure 2:

In synthetic turf pitches rubber infill is used to obtain the right level of sports performance like Shock Absorption, Ball Bounce, Surface friction, etc. Various types of infill are used which differ in chemical composition (Cork / TPE / EPDM / SBR) but all obtain the sports performance by a specific particle size, shape and design.

It precisely is the shape and design of the rubber infill particles which allows air spaces in between the infill particles and obtains movement of the particles which results in the specific sports performance and cushioning properties.

This is the reason why rubber infill in the FIFA Quality Program is described as "Performance infill". The Product Identification tests (FQP-Handbook of requirements, Edition October 2015, page 13, http://quality.fifa.com/globalassets/fqp-handbook-of-requirements-2015.pdf) clearly are based on variation in shape/surface/design like Particle size, Particle shape, Bulk density and infill depth.

Summarized we can conclude that the shape/surface/design is much more relevant for the end-use function than the chemical composition and therefor rubber infill has to be classified as Article.

Indicative questions in order to better determine whether or not the object is an article:
Question 6a and 6b: Rubber performance infill is not being further processed (no change in shape or design) and directly is delivered as end-product with end-use functions to the market.
Rubber Infill therefor has to be classified as Article.

3. Interpretation of entry 50 of annex XVII to REACH; synthetic turf and rubber mats/tiles being classified as an article?

Synthetic turf and rubber mats/tiles should be treated like carpets and flooring and should therefor also be classified as articles under REACH.

4. Interpretation of entry 50 of annex XVII to REACH; placing on the market

October 30th 2015 we received the following answer of the Dutch REACH helpdesk:
"Artificial turf is classified as an object under REACH. Crumb rubber is a part of it and therefore this restriction applies at least for infill material which is delivered directly to the consumer. Infill material is not sold to consumers, but because the consumer will be exposed to this rubber infill we believe this restriction applies to all the infill".

In the closed session of the meeting of the European Commission on November 12th the use of rubber tiles, produced from crumb rubber, was also part of the discussion. The European Commission proposed to make a difference between rubber tiles which are delivered for professional use (installed by / or purchased by Communities for example) and rubber tiles which are delivered for consumer use. The concentration of PAHs for consumer use is set more stringent compared to the concentration for professional use.

From our point of view it is not correct to make a difference between professional and consumer use because we may not discriminate between parties with respect to the overall exposure to harmful articles. In professional as well consumer use, the downstream users are comparable and an enormous population of users/players is exposed to PAHs which should be minimized in both cases.

5. Give the industry more time to evaluate the risks?

- Are there alternative products on the market which do fulfil the REACH regulation?
With the announcement that:

- tires, manufactured after January 1th 2010, shall not be placed on the market if they contain extender oils exceeding certain limits and
- the Regulation (EU) No 1272/2013 of 6 December 2013

the industry has been given the opportunity to prepare their raw materials, processes and supply chain to fulfill the upcoming restrictions and to be prepared for the final introduction of the European Regulation as of December 27th 2015.
Given the importance of the forthcoming regulatory change, several companies within the synthetic turf industry, made substantially investments in the development of synthetic turf systems which do fulfill the REACH Regulation. This means that there is a brought range of alternative products available on the market which do fulfill the REACH Regulation.

- Why deviate from the objective of REACH to improve the protection of the human health and the environment from the risks that can be posed by chemicals?

- Protect a certain portion of the (recycling) industry in front of the health and safety of players/users of synthetic turf pitches?

- Who is responsibility for the synthetic turf pitches where communities, often the owners of the projects, have the duty of care of all components? ;see the underneath discussion in the United States regarding the safety of SBR rubber infill.

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6. Discussion regarding the safety of SBR rubber infill

Since many years discussions have been going on regarding the health and safety of SBR rubber infill granulates. Many studies have been presented to support the pro- and opponents of the use of SBR rubber infill. To our opinion the new REACH Regulation is the first step to control the substances of the delivered articles.

While in the European Community new REACH restrictions are being enforced, in the United States there is a heated discussion regarding the safety of SBR rubber infill granules from post-consumer tires. At first the STC (Synthetic Turf Council) has been supportive to inform the market about the fact that SBR rubber granules are not harmful. The discussion in the press became negative for the artificial turf industry as well and this made the STC support and present also the alternatives on the market.

Please find in the articles below the confirmation that more studies needs to be done to secure Health Safety by playing on artificial turf filled with grinded tyre material. In California a 3 years USD 3.000.000 will be started mainly because there are no answers on long term exposure towards grinded postconsumer tire material. Focus in this study is on skin contact, digestion and inhalation.

www.nbcnews.com/storyline/artificial-turf-debate

www.nbcnews.com/news/investigations/rubber-mulch-safe-surface-your-childs-playground-n258586

www.cbc.ca/news/canada/british-columbia/artificial-turf-and-cancer-risk-a-dilemma-for-parents-1.3311554

www.nbcnews.com/storyline/artificial-turf-debate/senators-call-independent-crumb-rubber-turf-study-n459001

www.espn.go.com/espnw/video/14045313/e60-excerpt-turf-war

www.nbcnews.com/news/investigations/rubber-mulch-safe-surface-your-childs-playground-n258586

www.huffingtonpost.com/2014/12/20/scrap-tires-toxic-playgrounds_n_6356396.html

www.washingtonpost.com/local/artificial-turf-is-getting-a-closer-look-after-a-report-raises-safety-concerns/2015/09/22/fcf6a0ee-5649-11e5-abe9-27d53f250b11_story.html

www.nbcnews.com/news/investigations/how-safe-artificial-turf-your-child-plays-n220166

With this information we tried to support our opinion why the REACH Regulation should be enforced for articles like performance infill and synthetic turf. As an industry we should take the responsibility to be in control and embrace this REACH Regulation to minimize the exposure to harmful articles in the way synthetic turf systems are safe for the end users and children to play on.

With best regards,

Sekisui Alveo (Benelux) B.V.

25.

Van:
Verzonden: donderdag 3 december 2015 9:40
Aan: [redacted]kcleiden.nl
CC: [redacted] - DGMI; [redacted] - DGMI; [redacted]@vwa.nl
Onderwerp: Reactie Nederland op voorstel Europese Commissie
Bijlagen: NL comments on CACS_40_2015.docx

Geachte

Hierbij zend ik de reactie van de ministeries van I&M en VWS die wij naar de Europese Commissie verzonden hebben over de problematiek rondom rubber infill en valdempingtegels. Zoals u kunt lezen waren wij niet gelukkig met de door de Commissie voorgestelde oplossing omdat wij van mening zijn dat deze oplossing weliswaar voorlopig tot het door ons en de branche gewenste effect leidt maar niet consistent is met andere delen van de verordening. Wij zouden graag met u over onze reactie in contact treden om onze positie nader toe te lichten en om verdere vervolgstappen te overwegen en voor te bereiden.

Met vriendelijke groet,

Ministerie van VWS

NL comments on CACS/40/2015 'Interpretation of entry 50 of Annex XVII to REACH'

A. Interpretation on placing on the market for supply to the general public

In CACS/40/2015 the Commission presents two different interpretations on the market for supply to the general public. According to the first interpretation the restriction does not cover cases of tiles/mats used in public playgrounds and synthetic turf used in artificial sports fields. The second interpretation does cover these cases.

Although synthetic turf used in artificial sports fields as such is not sold to the general public and is only supplied to professional artificial turf installers (argument for the first interpretation), the NL is of the opinion that in this case the second interpretation is more in line with the spirit of the regulation.. The intention of the legislator with entry 50 is to prevent the general public is getting in immediate contact to the in fill material (and not only in the far end in some long supply chain). A supportive element for this reasoning can be found in the 6th paragraph of the entry, with a specific concentration limit to protect children to exposure of PAH's. In our view it seems strange to protect professional suppliers with a low concentration limit, while for the same case the protection of the general public is based on entry 28 with much higher concentration limits. The same argumentation should also be followed for tiles/mats used in public playgrounds. Additionally, the tiles are for sale to the general public in DIY stores.

This second interpretation is also in line with the original intention of the restriction dossier and the aim to reduce the overall exposure to PAHs. More arguments are given in the Commission document. Nevertheless we believe that the commission creates an even more difficult situation when it decides to use an interpretation of the phrase "supplied to the general public" that doesn't comply with the spirit of the definition. The NL believe that it would be more elegant to give industry more time to evaluate the risks of exposure to synthetic turf from recycled car tires and take this evaluation into account during the review of the entry. It would also be helpful to analyze the trends of PAHs In tires in the period before the review of 2017 to come to an informed decision about the feasibility of the restriction for these products.

B. Are synthetic turf and rubber mats/tiles installed in public places 'articles'?

In view of the Netherlands, rubber mats/tiles should be regarded as articles under REACH. We consider the Commission interpretation that rubber tiles/mats (and synthetic turf) that are permanently fixed are considered part of the facility or premises and will not be seen as 'article' incorrect .In our view, these should be treated as articles just likelike any carpet or flooring . Also, it should be noted that such tiles are sold individually to the general public.

For rubber infill the Commission argues that the rubber is present in the form of loose small granules which are comparable to pellets for plastic materials and therefore these granules should be considered mixtures and not articles. However we question this view because:

- In fill material should have a specific form and particle size. The form and size of the infill particles determine the amount of air in the "grass" layer which is important for the cushioning. In the Fifa Quality Concept for football turf, Fifa indicates product identification of in-fill materials based on particle size, particle shape, bulk density and composition. (http://quality.fifa.com/contentassets/78d39a99968f4315ac58a46ff15409eb/fqc-handbook-of-requirements_january-2012.pdf)
- Further, table 12 in the guidance on requirements in articles applies indicative questions to different stages of polymer processing. From this table it is concluded that a polymer pellet is a substance or a mixture. However for infill material questions 6a and 6b should be answered

with " YES" and therefore it could be concluded that infill material is an article. (http://echa.europa.eu/documents/10162/13632/articles_en.pdf)

- In our view, the interpretation of the Commission would be inconsistent with an earlier interpretation that aggregates from construction and demolition waste should be considered as articles (https://echa.europa.eu/documents/10162/13632/waste_recovered_en.pdf).

26

Van: - DGMI
Verzonden: woensdag 2 december 2015 11:30
Aan: - DGRW; - ILT; - ILT; - ILT; - DGMI; DGMI; (WVL); - DGMI
CC: DGMI; DGMI;

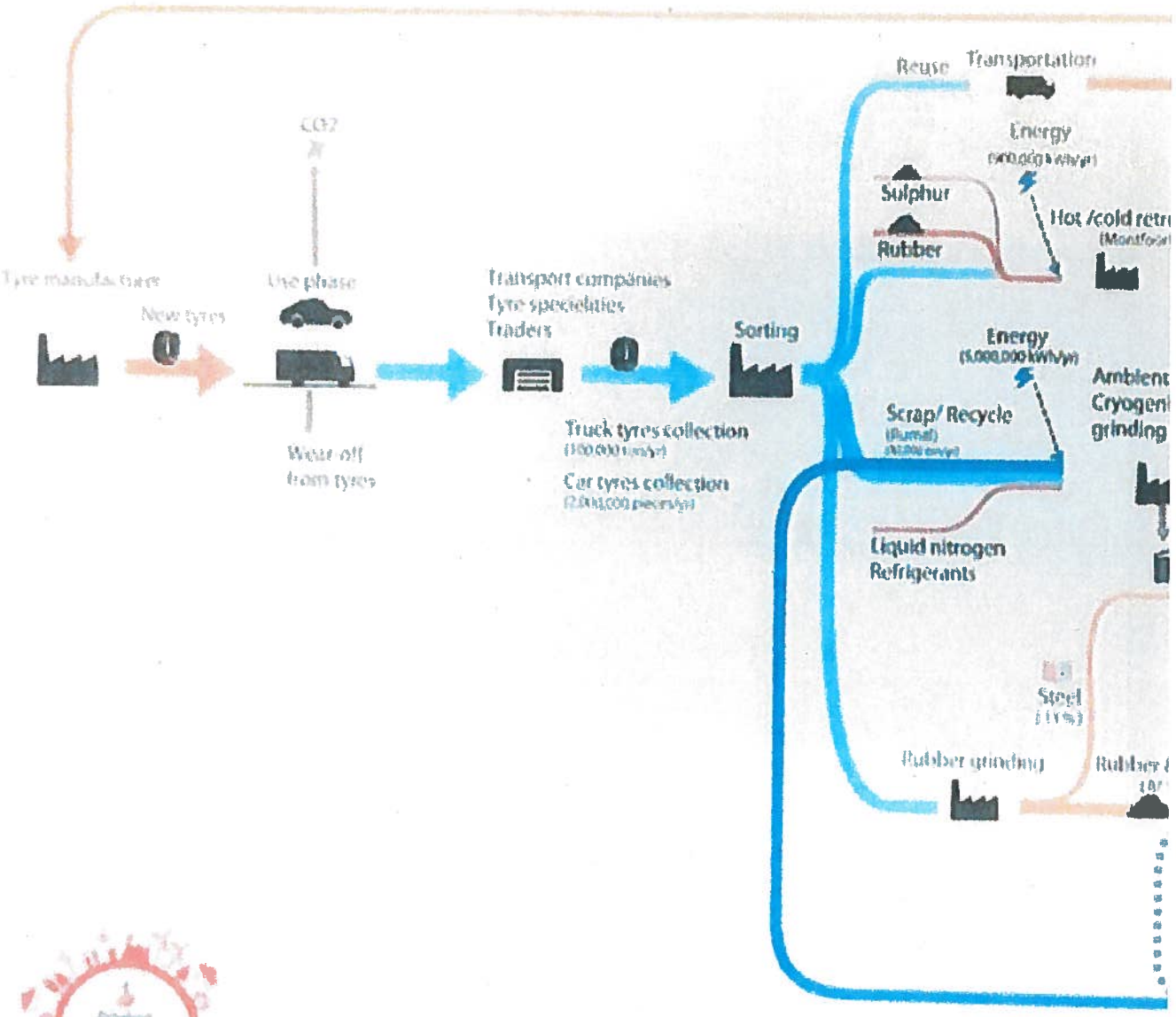
Onderwerp: RE: Afspraak beleid en inspectie inzake NSRR cases op donderdag 3 december aanstaande - autobanden
Bijlagen: 2012-12-12_ETRMA Technical Report_EoW Casings for retreading_vF.pdf; 2012-09-10 _ETRMA Technical Report on End of Waste Criteria for the rubber fraction of tyres_vF.pdf; SenterNovem-brief van 31 05 2005 rubbergranulaat.pdf; Brief van SenterNovem 15 maart 2007.pdf; Quality Protocol WRAP - tyres.pdf

Beste allen,
Nadere informatie over casus autobanden.
Bijgevoegd tweetal brieven over afval-geen afval kwalificatie van granulaat respectievelijk banden/karkassen.
Bijgevoegd tweetal verkenningen van de European Rubber and Tyre Manufacturers Association (ERTMA) voor EoW voor granulaat en banden/karkassen.

Over de case banden en rubber, deze kent 2 invalshoeken:
1] vrachtwagenbanden: via zogeheten karkassen die worden voorzien van nieuw bandenprofiel.
2] rubber granulaat: bestemd voor infill van kunstgrasvelden.

De branche is bezig om een UK partner te vinden waarbij naar verwachting de Retreat Manufacturing Association (RMA) aangesloten zal zijn. Ook WRAP heeft Quallity Protocol voorstellen gedaan in 2009 als richtsnoer voor EoW, zie tevens bijgevoegd.
Voor de Europese Commissie is banden een prioritaire EoW kandidaat, maar tot op heden heeft de Commissie nog geen EoW banden voorstel gelanceerd. De rapportage van de ERTMA is bedoeld mede als input voor dat EU trakect.

Hieronder ter info een grafische weergave van de bedrijfsprocessen van de NL kandidaat Kargro te Montfoort:



Van: DGRW
Verzonden: donderdag 26 november 2015 16:06
Aan: - ILT; - ILT; \ ILT; DGMI; DGMI; ; DGMI; WVL); - DGMI
CC: DGMI; - DGMI;
Onderwerp: Afspraak beleid en inspectie inzake NSRR cases op donderdag 3 december aanstaande

Beste allemaal,

Donderdag 3 december is er tussen 9 en 12 uur overleg gepland op de Koningskade met beleid en inspectie om de cases langs te lopen die we kunnen verwachten voor de internationale Green Deal North Sea Resources Roundabout. Voor die cases hebben kwartiermakers van beleid samen met de private initiatiefnemers factsheets ingevuld. Doel van het overleg is om na te gaan of er ervaringen tussen ILT en desbetreffende bedrijven zijn die de case meer /minder geschikt maken ("pre-huf") en om te verkennen hoe de betrokkenheid van de ILT in de Green Deal vorm zou kunnen krijgen.

Op basis van de onderstaande tabel (= verslag van meest recente Kwartiermakersoverleg) verwacht ik 6 cases te kunnen bespreken. Omdat ik niet van alle cases een aangepast factsheet heb ontvangen, heb ik een extra kolom toegevoegd waaruit blijkt of en wanneer er nog een nazending kan worden verwacht.

Met het oog op de digitale agenda's van de kwartiermakers, zou ik de volgende **agenda** willen voorstellen:

1. 09.00-09.15 binnenlopen
2. 09.15-09.25 voorstelrondje + vaststellen agenda
3. 09.25-09.40 toelichting NSRR + mogelijke cases die vanuit andere landen mogelijk worden voorgesteld (
4. 09.40-10.00 Case **Bodemassen** Inashco i.a.v.
5. 10.00-10.20 Case **PVC** i.a.v. ! ,i.p.v.
6. 10.20-10.40 Case **Struviet** Waterunie i.a.v.
7. 10.40-11.00 Case **Papier** i.a.v.
8. 11.00-11.20 Case **Autobanden** Kargro & Vaco
9. 11.20-11.40 Case **WEEE** Umicore
10. 11.40-12.00 Afspraken inzake betrokkenheid ILT bij NSRR

Papier	Er is veel gedoe geweest over BeNeLux actie. Vraag is of er energie en bereidheid is om case in NSRR in te brengen. Mogelijk initiatief aan Nederlandse zijde zou kunnen komen van Federatie Nederlandse oud Papier Industrie (inzamelers); het concrete bedrijf zou Sita – Suez Environment kunnen zijn. Zij zouden zich op 11 dec kunnen presenteren gekoppeld aan de vraag welke Vlaamse of Britse papierfabriek geïnteresseerd is als afnemer. heeft n.a.v. meeting in Londen aangegeven dat er waarschijnlijk Britse papierfabrieken geïnteresseerd zullen zijn. Check of matching voorafgaand aan 11 december mogelijk is		**Nog geen aangepast factsheet beschikbaar. VPN wil naast een casus vanuit NL oud papier export naar buitenlandse papierfabriek, ook een casus vice versa Wordt nog verkend onder leden incl FNOI**
Bodemassen	Opmerkingen op factsheet (wat is milieuwinst & wat is het knelpunt?) zijn teruggelegd bij Inashco. Er volgt volgende week een verbeterde versie tbv overleg met ILT op 3 dec		**Aangepast factsheet is bijgevoegd. Vertaling naar Engels vindt nog plaats**
Rubber: autobanden	Er ligt een voorstel van de Nederlandse koepelorganisatie voor End of Waste. Factsheet maakt niet duidelijk: wat milieuwinst is (refurbish tov recycling), wat het knelpunt is en welke cross border partners beoogd zijn. Is daarom geen case voor 11 dec , tenzij deze punten opgehelderd zijn.		**Nog geen aangepast factsheet beschikbaar. Dinsdag 1 dec is er overleg met Kargro & Vaco (branche)**
WEEE	Volgend gesprek met Umicore en OVAM staat gepland op 27 nov. Wordt waarschijnlijk met een Britse Ketenpartner		**Factsheet pas beschikbaar na 27 nov**
Kunststof: PVC	Waarschijnlijk 3 ketenpartners als private initiatiefnemers. Factsheet wordt aangepast n.a.v. opmerkingen. Er volgt volgende week een verbeterde versie tbv overleg met ILT op 3 dec		**Aangepast factsheet wordt morgen (27 nov) nagezonden door**
Fosfaten: struviet	Waternet wil als procudent van struviet uit afvalwater case inbrengen met afnemer in Frankrijk waar het knelpunt vooral zit in de meststoffenregelgeving. Unie van Waterschappen wil	i.o.m. n	**Factsheet wordt dinsdag 1 dec nagezonden door**

	concurrerende case inbrengen, maar zijn nog steeds niet over de brug gekomen met een concreet waterschap. Beide initiatiefnemers hebben nog steeds geen factsheet geleverd. ɔelt vandaag da uitelijk dinsdag 1 dec de factsheets binnen moeten zijn (tbv overleg met ILT op 3 dec) In meeting in Londen hebben de waterbedrijven aangegeven ook een concurrerende case te willen inbrengen. Via attenderen dat factsheet en pitch op 11 dec noodzakelijk zijn. Wordt mogelijk dus beauty contest tussen deze 3 cases		

kun jij nog doorgeven in **welke zaal** we elkaar treffen? Alvast bedankt.

Groet,

@minienm.nl
Sustainability Directorate
Ministry of Infrastructure and the Environment

ETRMA Technical Report on EoW criteria on Casings suitable for retreading – Final Version (11/12/2012)

PREFACE

ETRMA members together with hundreds of franchised or licensed retreaders collectively represent approximately 80% of the volume of retreaded tyres sold on the European market. The remainder of the industry is represented by independent retreading companies. The goal for ETRMA is also to represent the interest of the hundreds of retreading companies, many of which are SMEs, and whose economic viability represent an important element for the European environmental and industrial future.

The current retreading ratio[1] in Europe for truck tyres, which is the biggest market segment for retreading, is about 35% as compared to a 1:1 ratio in the US. The challenge is to turn the EU casings arising suitable for retreading estimated to 360,000 tonnes per year of "waste", into a true resource. The tyre industry believes that it stands at crossroads: it can either remain with the current business model where benefits are based on the number of units sold together with a decreasing retreading market despite its clear environmental benefits, or shift into a new business model selling kilometres instead of articles. Retreading together with regrooving has the potential to nearly quadruple the life duration of a new tyre.

The retreading sector firmly believes that the adoption of end-of-waste criteria for those casings which are suitable for retreading will be a key enabler in reaching this major market shift, thereby not only contributing to the resource efficiency roadmap, but also creating over 10,000 jobs, removing administrative burden and generating an additional annual turnover around € 1 billion by tapping the entire stock of truck casings which are suitable for retreading This report explains why.

The aim of the report is to facilitate the work of policy makers in defining end-of-waste criteria for those casings which are suitable for retreading. It is based on the methodology developed by the JRC for the development of end-of-waste criteria.

It includes a comprehensive techno-economic analysis of the tyre retreading chain, a proposed set of end-of-waste criteria as well as an analysis of the economic, environmental and legal impacts of granting the end-of-waste status to casings suitable for retreading throughout the EU.

The report has been produced by ETRMA based on the contributions of experts from its members, including SMEs, having a retreading activity. BIPAVER was also consulted during the elaboration process of the report and supports the ETRMA initiative.

[1] Sales of Retreaded tyres / Sales of new replacement tyres + Retreaded tyres)

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GLOSSARY

Used tyre: Tyre that has been subjected to any type of use and/or wear and which comprises ELTs and Part-worn Tyres.

End-of-life tyres: A waste tyre no more suitable for its original purpose.

Casing: the structural part of a tyre with a minimum remaining tread and sidewall material.

Casing suitable for retreading: Casing that has been inspected by tyre professionals and is judged suitable for further retreading.

Retreading: the generic term for remanufacturing a tyre by replacing the worn tread with new material. It may also include renovation of other parts of the tyre, such as the outermost sidewall surface or the protective ply.

Remanufacturing: returning a used product to its original status

Retreading production unit: a site or group of sites where retreaded tyres are produced.

Nominative casings or Customer owned casings: Casings which are brought to a retreader to perform a retreading operation but that remain the property of the user/customer.

Buffing: the process of removing old material from the casing to prepare the surface for the new material.

Repair: the remedial work carried out to damaged casings

Regrooving: cutting a pattern in the tread, deeper than the original pattern, in order to extend the tyre life.
N.B. A tyre is regroovable only if it is suitably constructed and carries the "REGROOVABLE" marking as per UNECE R54

Vulcanisation: chemical process for converting rubber or related polymers into more durable materials via the addition of sulphur or other equivalent "curatives." These additives modify the polymer by forming crosslinks (bridges) between individual polymer chains and thus enhance the durability of the rubber.

Waste: any substance or object which the holder discards or intends or is required to discard; [Directive 2008/98/EC]

Prevention: measures taken before a substance, material or product has become waste, that reduce:

(a) the quantity of waste, including through the re-use of products or the extension of the life span of products;

(b) the adverse impacts of the generated waste on the environment and human health; or

(c) the content of harmful substances in materials and products. [Directive 2008/98/EC]

Reuse: any operation by which products or components that are not waste are used again for the same purpose for which they were conceived [Directive 2008/98/EC]

Preparation for re-use: checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing; [Directive 2008/98/EC]

Recycling: any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations. [Directive 2008/98/EC]

Recovery: any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II of Directive 2008/98/EC sets out a non-exhaustive list of recovery operations [Directive 2008/98/EC]

ABBREVIATIONS

BIPAVER	Bureau International Permanent des Associations de Vendeurs et Rechappeurs de Pneumatiques
EASA	European Aviation Safety Authority
ECHA	European Chemicals Agency
ELT	End-of-life Tyre
EoW	End-of-waste
ETRMA	European Tyre & Rubber Manufacturers Association
ETSO	European Technical Standard Order
EU	European Union
IPPC	Integrated Pollution Prevention and Control
JRC-IPTS	Joint Research Centre – Institute for Prospective Technological Studies
LCA	Life-cycle Assessment
NAA	National Aviation Authority
OECD	Organisation for Economic Co-operation and Development
ORT	Off-road Tyre
PAH	Polycyclic Aromatic Hydrocarbon
PCT	Pre-cured and pre-moulded tread
REACH	Registration, Evaluation, Authorisation and Restrictions of Chemicals
SVHC	Substance of Very High Concern
UNECE	United Nations Economic Commission for Europe
WFD	Waste Framework Directive (Directive 2008/98/EC)

Introduction

Background

The retreading of tyres while bringing significant environmental benefits responds to a strong consumer demand. Consumer surveys show indeed that the life duration of tyres is the first concern of respondents. The retreading market is however failing to give its full potential. In short, as highlighted in this report, the retreading market has been steadily shrinking over the past ten years, the retreading of passenger car tyres has almost disappeared, there is an untapped stock of casings suitable for retreading around 40% and a possibility to nearly quadruple the life duration of truck tyres using a combination of retreading and regrooving which is rarely used despite a strong consumer demand in this direction.

The tyre industry believes that this is mostly due to a completely scattered EU market, with 27 different legal frameworks applicable to casings, to the administrative burden arising from the waste status applied in some Member States, and a lack of quality of some retreaded tyres which could be much improved by the application of end-of-waste criteria for the reasons highlighted in this report.

The tyre industry is convinced not only that casings suitable for retreading respond to the criteria listed in Article 6 (1) and (2) of the Waste Framework Directive (WFD) and therefore qualify to cease to be waste, but also that the granting of the end-of-waste status to casings suitable for retreading will support the retreading market in reaching its full potential. It will turn a waste, the current casings which are suitable for retreading, into a true resource for the benefits of end-users, retreading companies (mostly SMEs) and the environment.

Content of the report

Against this background, ETRMA members active in the retreading market (including SMEs) have taken a proactive approach, and gathered to provide technical information on the retreading market for the attention of the authorities. The report follows the methodology developed by the Joint Research Centre (JRC) for the development of end-of-waste criteria according to Article 6 (1) and 6 (2) of the Waste Framework Directive (WFD) 2008/98/EC.

This report firstly provides for an analysis of the market for all casings that are being inspected and considered to be suitable for retreading. The application of end-of-waste criteria is only required for casings that, before being inspected, were waste. There is an urgent need to clarify the waste status of casings that are being inspected for suitability for retreading but, due to the business model applied, may not be waste. The analysis shows that Member States apply the waste definition in a non-harmonised way in this context.

End-of-waste criteria are proposed in a second chapter followed by an analysis of the impact of the end-of-waste status in the third chapter. Proposed End-of-waste criteria comprise a set of product quality criteria (based on visible damage, marking, ...), quality assurance criteria (QMS auditable and ready for inspection, a set of documented procedures), training of the staff supervising/performing the cursory inspection of casings and information provided with the product (statement of conformity, statement that a QMS is in place and applied).

This report is not intended to replace the assessment by the EU Commission, which includes work in a Technical Working Group composed of experts from Member States and involving experts from all relevant stakeholders, but to facilitate and expedite this work. Member States and other stakeholders may wish to review of the document. This could be done during the process of further development of the criteria, to be initiated by the EU Commission.

Expected benefits of the End-of-Waste status

As extensively discussed in the impact analysis of the EoW status presented in chapter 3 of this report, the benefits listed below are expected from the introduction of end-of-waste criteria.

Those benefits are mostly drawn from the further professionalization of the retreading market which will be in particular triggered by the mandatory introduction of quality management systems. This professionalization is expected to :

(1) improve the quality of the end-products hence respond to the current mistrust of some end-users against retreaded tyres,

(2) increase the ratio of the selection of casings suitable for retreading by an improved selection procedure,

(3) create a true single market which should ultimately

(4) reverse the current decreasing trend of the retreading market and speed-up its full market take-up.

- Impact on retreading companies:
  - creation of an additional annual turnover of at least €1 billion by tapping the entire stock of truck casings which are suitable for retreading
  - reduction of the costs of administrative burden, mostly shipment costs of casings, which are mostly impacting SMEs since they represent the bulk of retreading companies
  - economies of scale due to the completion of the single market

- Impact on employment:
  - creation of 10,000 additional jobs
  - upgrading of the staff sorting casings thanks to their training leading to better quality jobs

- Impact on end-users:
  - response to the key and foremost concern of end-users which is the life duration of tyres
  - possibly consistent market take-up of retreading and regrooving technologies together nearly quadrupling the life duration of tyres.

- Impact on the environment:
  - avoid the recycling (and new production) of over 170,000 tonnes of casings which is equivalent of the load of 8.500 trucks which could be potentially removed from EU roads shift of the business model of the tyre market where waste becomes a true resource in line with the resource efficiency roadmap

1 Analysis

The development of end-of-waste criteria requires consideration of the characteristics of waste streams, the structure of the industry, the economics, market situation and trade flows, the existing regulations and standards/specifications and the environmental and health aspects. The following sections look at these issues throughout the entire tyre retreading chain.

1.1 Components of a tyre

Tyres are made up of various components, which include several parts, types of steel and rubber compounds. The main components in a tyre structure, as well as the technical terms used for consumers to be able to identify its characteristics, are shown in Figure 1 below:

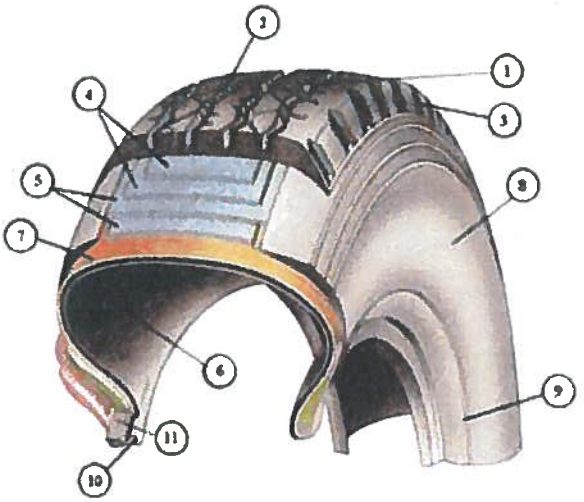


Figure 1: Components of a tyre

"**Tread**" (1) the part of a pneumatic-tyre that is designed to come into contact with the ground.
"**Tread groove**" (2) the space between the adjacent ribs or blocks in the tread pattern.
"**Sidewall**" (3) the part of a pneumatic-tyre between the tread and the area designed to be covered by the rim flange.
"**Ply**" (4, 5) a layer of "rubber" coated parallel cords. In the radial tyre, it has the purpose of stabilizing the tyre.
"**Cord**" (6) the strands forming the fabric of the plies in the pneumatic-tyre.
"**Casing**" (7) that structural part of a pneumatic-tyre other than the tread and outermost "rubber" of the sidewalls which, when inflated, supports the load.
"**Section width**" (8) the linear distance between the outside of the sidewalls of an inflated pneumatic tyre, when fitted to the specified measuring rim, but excluding elevations due to labelling (marking), decoration or protective bands or ribs.
"**Belt**" (9) applies to a radial ply or bias belted tyre and is a layer or layers of material or materials underneath the tread, laid substantially in the direction of the centre line of the tread to restrict the casing in a circumferential direction.
"**Bead**" (10) the part of a pneumatic tyre that is of such shape and structure as to fit the rim and hold the tyre onto it.
"**Chafer**" (11) material in the bead area to protect the casing against chafing or abrasion by the wheel rim.

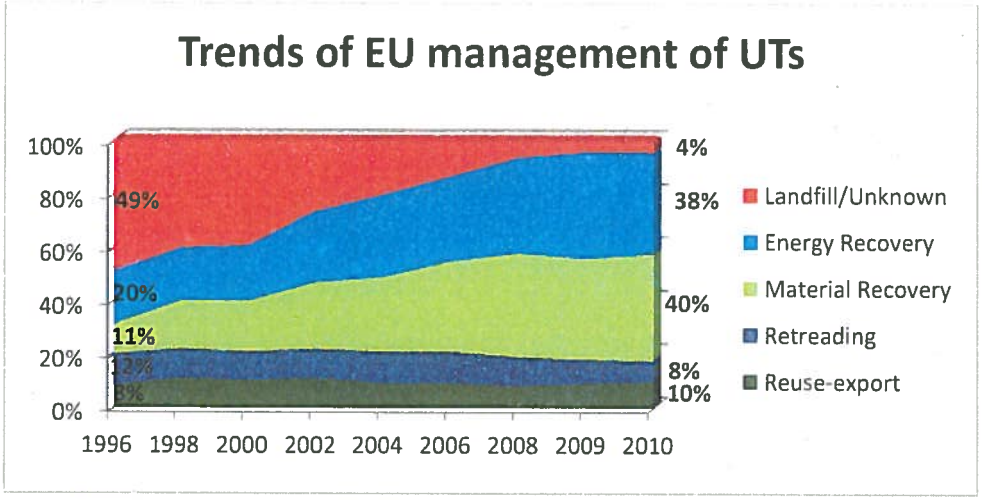
The most common types of tyre structure are diagonal (cross-ply), bias-belted and radial. Almost 80% of all tyres sold are radial tyres. The sidewall of a tyre contains the information, which varies according to the national applicable legislation and manufacturer, that is necessary for users to purchase tyres that are appropriate to their needs.

1.2 Trends of management of used and end-of-life tyres

There are several management options for used and end-of-life tyres. The main management options are:

- Reuse of used tyres (often takes place outside of the EU)
- Retreading
- Material recovery
- Energy recovery
- Landfilling

The trends in the management are given in Figure 2



Source: ETRMA
Figure 2: Trends in management of used tyres and ELTs 1996 – 2010

According to 2010 ETRMA estimates, the quantity of casings which were sorted for retreading in EU27 + Norway & Switzerland represents about 258,000 tonnes of used tyres. In 1996, retreading represented 12% in volume of all UTs treated – today, this only represents 8% in volume of all UTs treated mainly due to the decline of the retreading of passenger car tyres and light commercial vehicles in Europe.

Regrooving is another method to manage used tyres in order to extend the tyre life. Regrooving is a common practise in particular for truck tyres. It consists of cutting a pattern in the tread, deeper than the original pattern. Regrooving is best done at a professional tyre service point and the tyre remains on the same vehicle. Care should be taken to ensure that sufficient tread rubber is left for its protection of the casings, plies or belts and that the regrooving does not expose those.

ETRMA does not collect data on the number of tyres that are regrooved and therefore these figures do not appear in the statistics. Regrooving should only be done on tyres that are designed for being regrooved, i.e. with a sufficient rubber layer under the tread.

1.3 Casings suitable for retreading and retreaded tyres

In Europe, retreading is today mainly applied to the following tyre markets:

- Aircraft
- Truck & bus
- Off-road/earth moving
- Agricultural
- Industrial vehicles (container handlers and straddle carriers)

The question as to whether a casing can be retreaded also depends on the type of tyre. The following principles apply in general:

- Aircraft tyres: Many times
- Truck & bus: One to three times
- Off-road/earth moving : once, as a general rule
- Agricultural: once, as a general rule
- Industrial vehicles: once, as a general rule

1.4 The selection process of casings suitable for retreading

In order to determine if casings are suitable for retreading they have to undergo an inspection process. During this process, the quality of the casings is checked at several occasions. This is done visually by an experienced casings selector, often at the site of the transport companies. The selector first selects types of tyres for which it is known that there is a demand from the retreading industry. This can be based on dimensions of the tyre. Certain types of tyres are more frequently used than others.

He then inspects each tyre extensively for specific damage or degradation. If a tyre has been attacked by chemicals or fire it cannot be selected. A certain level of damage can be tolerated, as the retreading firm will be able to repair the casing. The level of damage that is allowed depends on the specifications of the retreader and is mainly determined economically. When too much repair is necessary it may still technically be possible to retread the tyre, but it will no longer be economically viable.

Tyres that have been selected as suitable for retreading are stored until the transport to a retreading firm. In case of small workshops, retreading can occur in the same place where the selection has been done.

1.5 The Retreading and regrooving Process

Retreading
Retreading is a remanufacturing process designed to extend the life cycle of a tyre. During the process, the worn tread is replaced with new material. It may also include renovation of other parts of the tyre, such as the outermost sidewall surface or the protective ply.

Regrooving
Retreading should not be confused with regrooving. Regrooving is an operation where a pattern is being cut in the tread, deeper than the original pattern, in order to extend the tyre life. This is commonplace amongst heavy commercial vehicle (i.e. heavy trucks) and off-road tyres where new tyres are deliberately constructed with an over-thick tread layer. Once the initial tread cut has worn down, the tread pattern is cut into the tyre. Regrooving can be done on each tread life.

Combining retreading and regrooving
Retreading and regrooving can be complementary strategies to extend the tyre life of truck and bus tyres. Regrooving is done when the tread of a new tyre is worn down. After the regrooved pattern is worn down, the tyre can be retreaded, provided that the regrooving has been done according to the recommendations of the tyre producer and has not caused damage that would render the casing no longer retreadable. The tread of the retreaded tyre can be regrooved when this pattern is worn etc. By combining careful regrooving and subsequent retreading the life time of a truck tyre can be extended significantly as illustrated in figure 3.

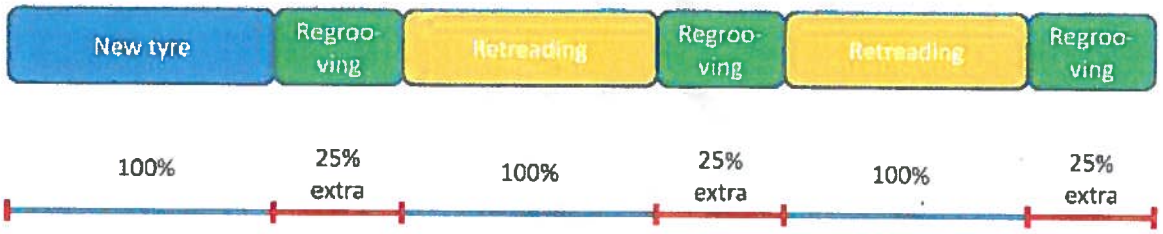


Figure 3: Life time extension of a tyre when combining regrooving and retreading

If a tyre is being regrooved 3 times and retreaded twice, the life time of the tyre nearly quadruples compared to a new tyre that is becoming an ELT directly when the original tread is worn.

Two retreading technologies in use: hot and cold retreading
In Europe, tyres are being retreaded using two technologies: hot and cold retreading. These are very diverse both in terms of product technique and industrial process in a wide sense. However, both processes are vulcanisation processes. Vulcanisation is a chemical process for converting rubber or related polymers into more durable materials via the addition of sulphur or other equivalent "curatives." These additives modify the polymer by forming crosslinks (bridges) between individual polymer chains. Vulcanized material is less sticky and has superior mechanical properties.

The hot-cure system (hot retreading) occurs with a vulcanisation process very similar to the one applied to a new tyre i.e. covering the casing with a semi-finished raw rubber and so moulding the tyre thus covered in curing ovens which contain the moulds of the requested designs. The investments requested for the retreader are very high since each design and dimension of the tyre to be retreaded needs a specific mould. For these reasons, hot retreading is prevalently operated in big production units in order to generate the appropriate economies of scale to meet relevant investments. This system, very widespread in Italy, France, UK and Spain, is a little bit less common in Germany and in the Netherlands and is nearly completely absent in other markets.

Pre-cure retreading (or cold retreading) uses a PCT (Pre-cured & pre-moulded tread) which is put on the casing and further vulcanized. The investments for the retreader are limited since a significant

part of the added value comes from the producer of the pre-moulded surface which has the responsibility to design and mould (pre-vulcanize) all the potential types of treads (design, width, depth) which are requested by the market. Cold retreading is spread all over Europe and reaches very high market shares (90%) in Scandinavian countries & Eastern Europe, becoming by far the prevalent system in all other markets in the world.

The **main steps of the retreading process** are:

1. Initial Inspection
2. Buffing
3. Repairs
4. Application of new rubber on the tread area
5. Vulcanisation
6. Final inspection

1. Initial inspection. Each used tyre received in a retreading plant is subjected to a very rigorous visual inspection. Inspectors may be assisted by the use of various non-destructive inspection equipments, for example X-ray, pressure testing, ultra-sonic or shearography and nail detection. The inspection at the retreading site may reveal damages that were difficult to appreciate by a simple non-instrumental visual inspection. The retreader may decide that:

- the retreading is possible
- the retreading is still possible, but that the price for purchasing the casing may need to be adjusted;
- retreading is not possible according to its specification and return the tyre to the provider who may find another retreader for which the tyre would fit into their specifications for retreading;
- the off-specification tyre should be removed as waste and handled accordingly.

It is in the mutual interest of both the selector and the retreader to limit the number of casings that will be rejected at the retreading plant.

2. Buffing. After inspection, tyres have the residual tread and/or the sidewall mechanically removed with buffing machines. Buffed materials are usually recycled into products in the rubber industry.

3. Repairs. If necessary nail hole and other repairs are performed according to the retreading industry repair guidelines.

4. Application of new rubber on the tread area. The pre-cure system uses a tread that has already been vulcanised. A thin layer of cushion gum is applied on the buffed tyre and the pre-cured tread is placed on that layer. The hot-cure system uses an unvulcanised tread layer that is placed directly on the buffed tyre.

5. Vulcanisation. In the pre-cure system the tyre is placed in a curing chamber and by using heat the tread adheres to the tyre in a process similar to the vulcanisation process of a new tyre. In the hot-cure system the casing is placed in a rigid mould in which the tread adheres to the tyre with the new tread design moulded in. Again this process is similar to the vulcanization process of a new tyre.

6. Final inspection. The retreaded tyre is subjected to a final inspection. This inspection ensures that only tyres that meet industry quality standards in line with UNECE R109 are allowed to leave the retreading plant. Also at this stage of the process a limited number of tyres may be rejected and have to be removed as production waste and be handled accordingly.

1.6 Industry structure

1.6.1 Tyre collection companies and casings dealers

The supply of casings for retreading can be organised by the retreading company itself, depending on his business model, or he can buy casings from tyre collection companies or specialised casings dealers.

In Europe, there are approximately 10 major collection companies that collect truck tyres from approximately 10,000 truck tyre dealers. A casings dealer obtains his casings from collectors but typically does not collect them from tyre dealers or garages. The number of casings dealers is not precisely known but is estimated to be a few thousands with a limited number of major players. Some casings dealers also collect casings themselves. These companies inspect tyres to select those that are suitable for continued use and retreading and can be sold as second hand tyre or to a retreading company. The remaining casings are removed for recycling or recovery.

It is difficult to provide indications of the turnover and number of employees involved in the collection and selection of casings for retreading. In the truck tyre market, collection and selection of casing for retreading is one of the major business activities. The turnover is probably several hundreds of million Euros and the number of people involved would be several hundreds.

1.6.2 Retreading companies

In Europe, retreading companies are very often involved in different market segments (e.g. truck & bus + earth moving tyres). Most of the tyre manufacturers have an own or franchised presence in the truck tyre and aircraft retreading business. Next to this, there are a few hundreds of small & medium sized independent retreaders which are mainly active at regional / national level mainly in the truck tyre segment.

The size of the retreading companies and the collection companies and casings dealers involved in the supply of casings to those retreaders is normally relatively small. They would all be considered to be small or medium-sized companies in the terminology used in description of industrial sectors. However, even within this segment of SMEs there are rather large differences in size of the companies. In this section the relative size of these companies is described in terms of number of tyres treated.

Truck tyre market

In the truck tyre market approximately 500 tyre retreaders are active with relevant differences in size, technical profile and business model. Large companies may retread more than 150,000 tyres per year, while a few and decreasing number of very small ones may only do several hundreds of tyres per year. The 10 largest companies serve approximately 50% of the market.

SIZE OF THE PLANT	PRODUCTION VOLUME TRUCK TYRE RETREADS/Year	Number of Plants
VERY LARGE	> 150,000	< 10
LARGE	80,000 → 150,000	+/- 15
MEDIUM	20,000 → 80,000	+/- 30
SMALL	5,000 → 20,000	+/- 300
VERY SMALL	< 5,000	+/- 150

Source: industry estimates
Table 1: Size distribution and number of retreading plants

Moreover, there are approximately 10 major and 15 minor suppliers of pre-cure treads including extra-European players and 10 suppliers of retreading machinery and moulds.

In total more than 6 million truck tyres are being retreaded yearly in Europe. The total turnover of the truck tyre retreading industry is between €1.5 – 1.75 bn. and the sector employs approximately 10,000 qualified employees.

Aircraft tyre market
There are 3 major retreaders of aircraft tyres in Europe. Most major airline companies lease the tyres from the manufacturers and these do the retreading of their tyres. In total, the market volume is estimated at 350,000 retreaded tyres per year. The annual turnover is estimated to be over €200 million and the sector employs several hundreds of people for the retreading operations.

Earth-moving and OTR retreaded tyre market
There are 40 - 50 major retreaders of earth-moving tyres in Europe spread in Italy, Portugal, Benelux, Scandinavia, Germany, UK, Spain. The total market volume is approximately 50 – 80,000 tyres per year. The annual turnover is estimated to be € 50 – 90 million and the sector employs several hundreds of people.

Agricultural and industrial tyre market
There are only a few companies that are specialised in retreading of agricultural and industrial tyres.

The total retreading market in the EU represents 450 – 500 companies with a total of approximately 10.000 employees and a turnover of less than €2.0 bn. per year.

1.7 Economy and market

The truck tyre business model
In order to understand the complexity of the retreading business and of retreading flows, 4 examples different modes of sourcing casings suitable for retreading and marketing of truck tyre retreads are illustrated below.

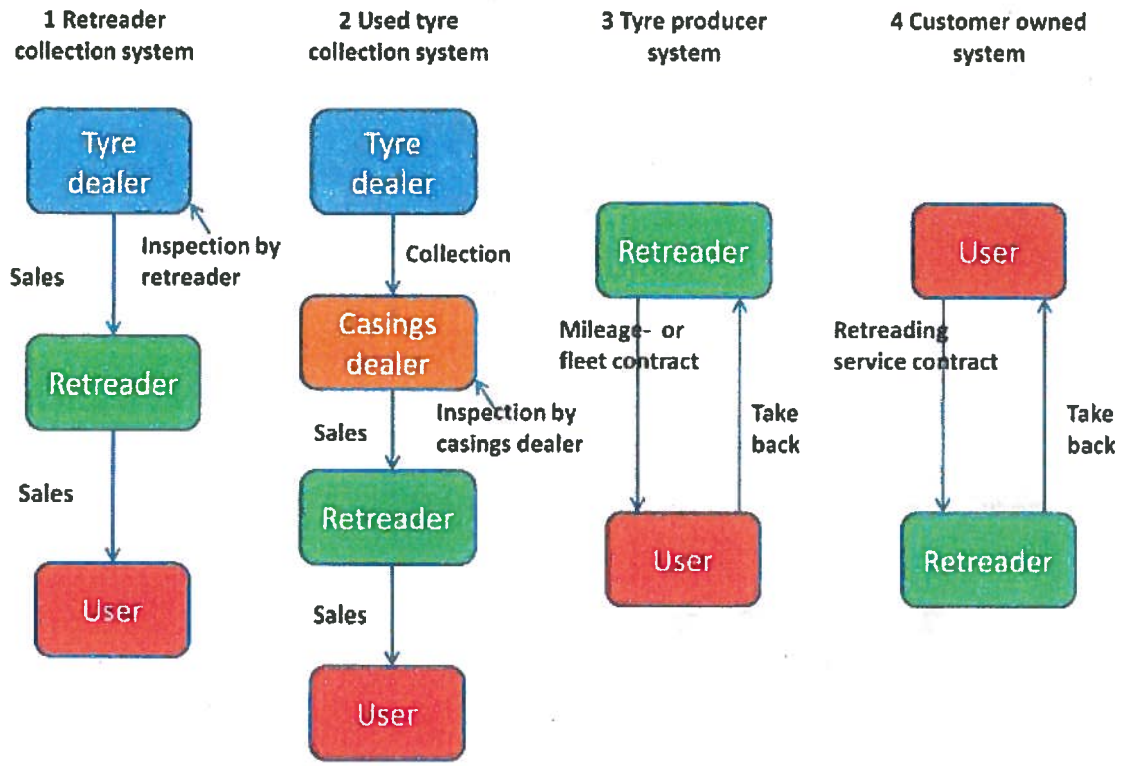


Figure 4 – Examples of possible business models

In business model 1, it is the retreader that sends over his inspection experts to tyre dealers or other points where used tyres become available. The inspector inspects the tyres at the premises of the tyre dealer and selects the tyres that are suitable for retreading and purchases them. After retreading the retreaded tyres are sold on the market.

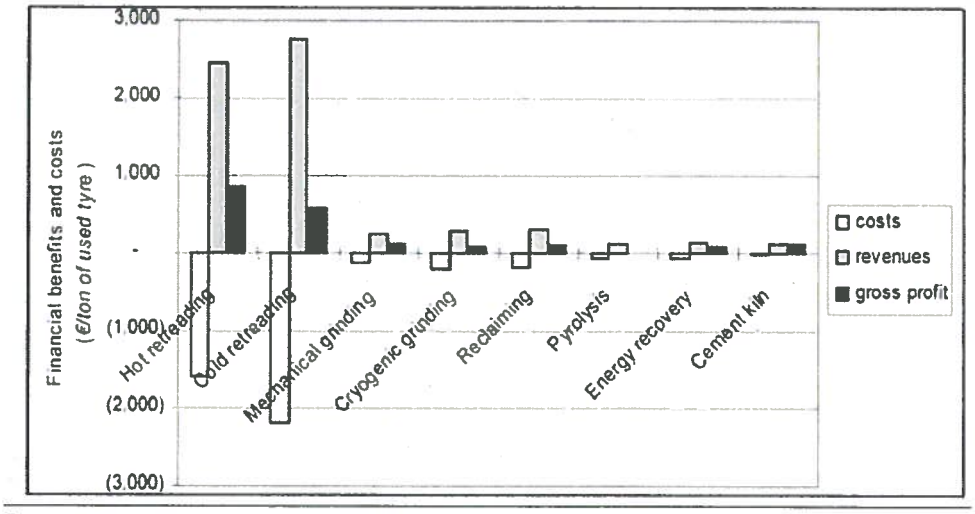
In business model 2, the used tyres are collected at the tyre dealer, either by a collection firm or casings dealer. The inspection of the tyres takes place by the collection firm or casings dealer at his premises. The tyres that are suitable for retreading are sold to a retreader. The retreader sells the retreaded tyres on the market.

In business model 3, the retreader, which is often a tyre producer, has a service contract with the users of the tyres. The tyres are not sold to the user, but are subject to a rent or lease contract, based on replacement after a certain number of kilometres use or on request of the user. The retreader takes back his tyres and inspects them to determine the suitability for retreading. After retreading the tyres remain part of the service contracts with the users of the tyres. The tyres remain the property of the tyre producer during the whole life-cycle of the tyre until it becomes an end-of-life tyre.

In business model 4, it is the user of the tyre that is the owner of the tyre. The user of the tyre has a service contract with the retreader to inspect his tyres for suitability for retreading. After retreading the user of the tyre takes back his retreaded tyres. The tyres remain the property of the user during the whole life-cycle of the tyre until it becomes an end-of-life tyre.

There are retreaders that operate variants of these business models or several of these business models at the same time.

Indicative costs, revenues & profits



Source: JRC Report on EoW criteria for Waste Derived Fuels

Figure 5: Indicative costs, revenues and profits for different tyre management options

This figure represents the situation in Western Europe around 2005. It shows that the cost- and revenue structure of the retreading processes are completely different from those of the recycling processes of grinding and reclaiming and the energy recovery processes of end-of-life tyres. It clearly shows that Art. 6.b) of the WFD is met: there is a market and a demand.

Retreading market statistics for truck tyres in Europe

The truck tyre market is the most important in terms of volume and number of companies for which a specific data collection system exists through ETRMA.

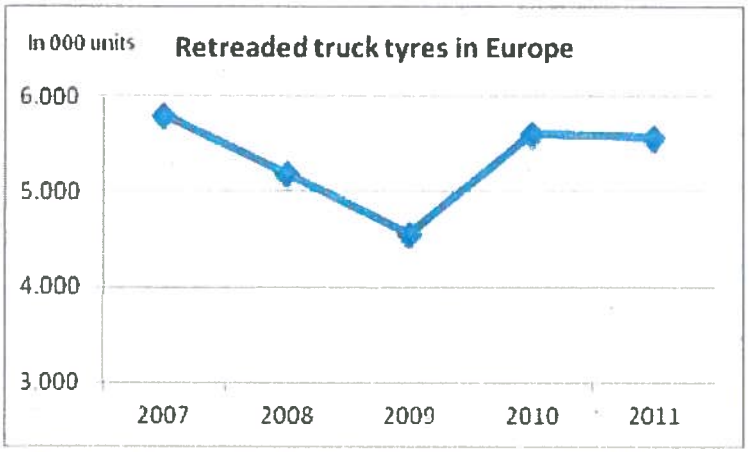


Figure 6: Sales data of retreaded truck tyres in thousands of units.
Source: ETRMA pool

ETRMA pool figures exclude imports of retreaded truck tyres (considered as marginal by ETRMA) and imports of raw materials for retreading (e.g. PCT) estimated to represent 10% of the ETRMA pool figures. Data including estimates for those tyres are included in table 2 which represents a best estimate for the total market of retreaded truck tyres in Europe.

# units	2007	2008	2009	2010	2011
ETRMA pool sales	5,800,000	5,193,000	4,561,000	5,605,000	5,567,000
Imports of raw materials	580,000	519,300	456,100	560,500	556,700
Total	**6,380,000**	**5,712,300**	**5,017,100**	**6,165,500**	**6,123,700**

Table 2: Best estimate of the total truck tyre retreading market in Europe
Source: ETRMA pool, industry estimates

According to industry estimates, the calculated arising of retreadable truck casings (EU + Turkey excl. Russia) is about 11.5 million units (based on sales of replacement & OE tyres, all brands, to which statistical laws of return and technical retreadability coefficients - "scrap ratios" - are applied). If we consider the retreaded truck tyre market to be around 7 million units for the same perimeter, it can be concluded that there is an untapped potential of 4.5 million of casings suitable for retreading which escape retreading. All in all, this means that only 61% of retreadable casings are in fact retreaded.
The **truck tyre retreading market** is by far the biggest market segment. According to industry estimates, the truck tyre retreading market is at least 10 times bigger than Earth Moving and passenger in terms of rubber consumption.

AREA/ COUNTRY	Sales of New Replacement Truck Tyres (units) (2011) – A -	Sales of Retreaded Truck Tyres (units) – B - (2011)	Ratio: Retread / Total replacement New+retread (B/A+B)	Ratio: Retread / Total replacement New+retread 2011 vs. 2010 (% points)	% of the retread market	% of cold retreading	Indicative # of Retreaders
DE, AT, CH	1,965,916	1,348,460	41%	4%	24%	62%	> 100
France	995,198	948,850	49%	1%	17%	14%	< 30
UK	937,552	739,267	44%	7%	13%	33%	< 40
Italy	1,341,137	527,219	28%	0%	9%	46%	> 70
Portugal & Spain	1,115,373	486,197	30%	1%	9%	45%	> 70
Scandinavia	623,737	459,639	42%	-7%	8%	79%	> 70
Benelux	718,642	285,562	28%	3%	5%	46%	> 30
Central & Eastern Europe	2,247,335	715,595	24%	-3%	13%	77%	> 100
Greece, Ireland	219,738	56,104	20%	4%	1%	66%	
TOTAL	**10,164,828**	**5,566,893**	**35%**	**1%**	**100%**	**49%**	**> 500**

Table 3: Key figures per region for retreaded truck tyres
Source: ETRMA pool and industry estimates (number of companies)

The data in table 3 are excluding imports (new tyres +/- 2 million units) and non declared production volumes (retreaded tyres +/- 0.5 million units).

The percentage of cold retreading gives an indication of the size of the companies. Companies using cold retreading are as a rule smaller than those using hot retreading technologies.

There has been a gradual but up to now continued loss of market share versus new truck tyres on the European market. In 2011, it represented a ratio of 35% on the replacement market whereas it was nearly 100%. 15 years ago and still around 90% in North America. There are large regional differences due to different competitive conditions. France, UK, Scandinavia and Germany show high ratios, while the other parts of Europe show much lower ratios.

France

In France, over the last 10 years, one can observe a stabilisation of the penetration of retreaded truck tyres between 44% and 46% of the market (see Figure 1).

This is due to mainly 2 factors:

a) an important market share of premium products in France (3 companies representing >90% of the market)

b) a high acceptance of retreaded tyres among transport companies

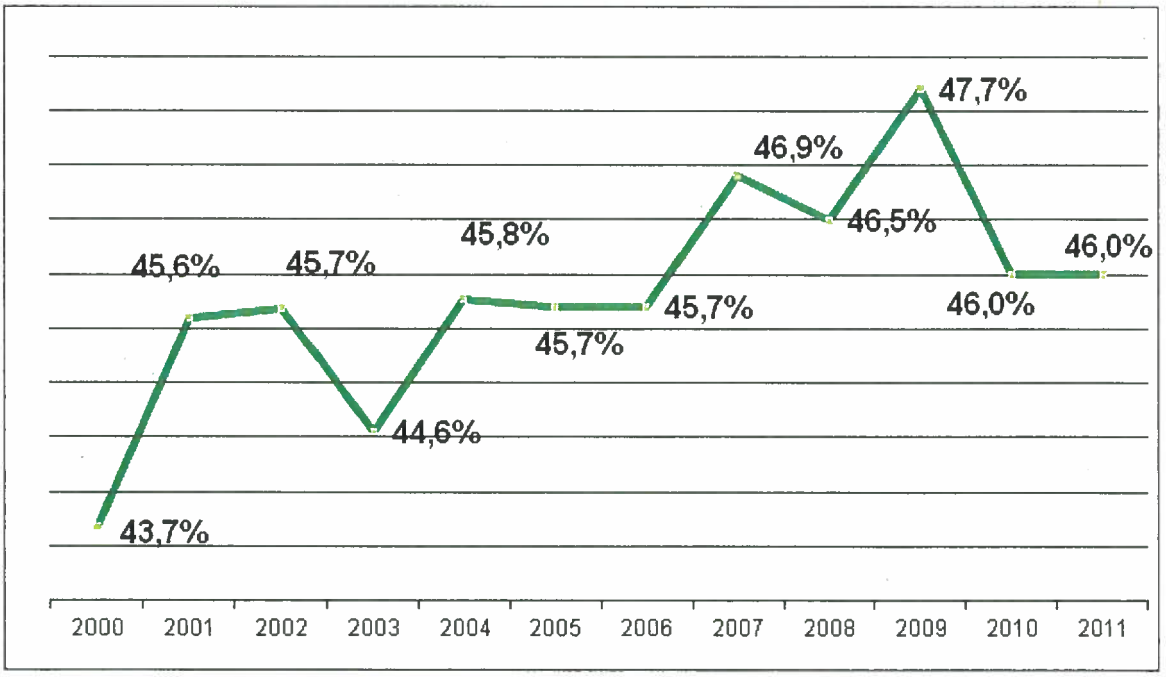


Figure 1 – Evolution of the penetration of retreaded truck tyres – France)
Source: SNCP

Italy

In Italy, the market has suffered the last decade (see Figure 2) for a number of reasons. Retreaded tyres had a bad reputation of being bad products because of an oversupply of unqualified retreaders in Italy and market participants, dealers and fleet operators held strong prejudices regarding their reliability. Moreover, there is a large parallel market for trade in used tyres. Casings dealers in Italy did not develop a well-functioning system of systematic sorting of casings suitable for retreading. This combined with the relatively bad condition of Italian roads and the habit of driving tyres to their

beading a large number of tyres were too damaged to be retreaded, led to a shortage of casings suitable for retreading in Italy.

Truck tyres (units x 1,000)	Replacement market only	2000	2004	2007	2008	2009
ITALY	New tyres ETRMA POOL + IMPORT	1,300	1,750	1,548	1,649	1,709
	Retreaded tyres	880	820	750	700	609
	Total	2,180	2,570	2,298	2,349	2,318
	Ratio Retread / Total	**40%**	**32%**	**33%**	**30%**	**26%**

Figure 2 – Evolution of the penetration of retreaded truck tyres – Italy
Source: AIRP + Marangoni Data

Germany
In Germany, the retread/new ratio has decreased between 2000 and 2008 and slightly recovered in 2009 without reaching again the 2000 level (39%).

Truck tyres (units x 1,000)	Replacement market only	2000	2004	2007	2008	2009
GERMANY BRV	New tyres ETRMA POOL + IMPORT	1,970	2,020	2,307	1,927	1,582
	Retreaded tyres	1,270	1,140	1,150	980	920
	TOTAL	3,240	3,160	3,457	2,907	2,502
	Ratio Retread / Total	**39%**	**36%**	**33%**	**34%**	**37%**

Figure 3 – Evolution of the penetration of retreaded truck tyres – Germany
Source: WdK, BRV

It can be concluded that the current market situation in the EU is far from ideal. Apart from a small number of countries where the truck tyre market remained competitive (e.g. France), the situation for truck tyres, representing the most important market for retreading, has degraded considerably. This market has considerable potential for growth if measures to remove barriers and reduce costs such as the end-of-waste criteria would be implemented.

1.8 Specifications and standards

Quality standards for retreading are laid down in the UNECE Regulation 109 (for commercial vehicles and their trailers, a.o. truck tyres).

UNECE Regulation 109 leads to harmonised requirements for the retreading of tyres and to a high level of safety and environmental protection. They enable the free circulation of retreaded tyres.

By the Council Decision 2006-443, as from 13 September 2006, the provisions of UNECE Regulation 109 apply as a compulsory condition for the placing on the market in the Community of retreaded tyres falling under the scope of that Regulation.

These regulations introduce similar standards of safety and quality control for retreaded tyres as for new tyres. By making UNECE Regulation 109 compulsory for retreaded commercial vehicle tyres, the EU avoided the necessity to develop its own prescriptions for retreaded tyres, while at the same time ensuring that its tyre manufacturers can benefit from a wide market which extends far beyond the EU borders.

For aircraft tyre retreading, several specific standards apply. The US Federal Aviation Administration requires that retreaded tyres meet the requirements in their Advisory Circular AC 145. They have an office in Europe that performs annual audits to assure that all retreaders meet these requirements. The European Aviation Safety Agency (EASA) also requires such annual audits. Those are performed by the Dutch National Aviation Authority (NAA) on behalf of the EASA. Any aircraft tyre, including retreaded tyres must have an airworthiness authorisation which is granted by the European Technical Standard Order (ETSO). Tyres that are authorised have to bear an E-mark.

This set of standards for the different types of tyres covers the whole of Europe. Previously there were also national standards but these are no longer in place as the abovementioned set covers all aspects.

1.9 Legislation and regulation

In this section, the legislation applicable to casings and to the companies that collect, select, trade and retread them is mentioned. Legislation that would be applicable if casings are waste is included, as well as legislation that would be applicable if casings are products.

This section covers:

- Waste legislation (the EU Waste Framework Directive)
- Regulations covering the different operations (IPPC directive)
- Transport of tyres (Shipment regulation)
- Product legislation (REACH)

The legislation regarding tyres is under constant development that may have impact on retreaded tyres. These developments should be monitored and where necessary the end-of-waste criteria should be adapted to these new developments in future.

1.9.1 Waste Framework Directive

Waste definition

The Waste Framework Directive (Directive 2008/98/EC) defines waste as:

> *'any substance or object which the holder discards or intends or is required to discard'. (Art. 3.1.)*

Even when the waste definition of the Waste Framework Directive as applied to nominative/customer owned casings should be clear and does not seem to leave scope for interpretation , an overview of the status of casings suitable for retreading in a few EU Member States (Italy, the Netherlands, UK) shows that there are discrepancies of interpretation at national level.

Italy
In Italy, there is a specific legal provision indicating that casings for retreading are not waste[2].

The Netherlands
In the Netherlands, SenterNovem (now Agentschap NL) sent to industry an interpretation letter of the waste / non-waste status of casings for retreading (15 March 2007).

2 different cases were assessed:

Case I (Customer-Owned Casings): The tyre owner allows a casing selector from a retreading company to examine on its own premises which tyres are suitable for retreading and which are not. The owner mandates [the retreader] to retread the preselected suitable tyres and receives *its own tyres* back after retreading. Therefore it does not discard its own used tyres".

Case II: The owner discards its own used tyres. A middleman (for example a garage, a tyre dealer or a collector) assesses whether those tyres are suitable for retreading and also determines the residual value that the "discarder" receives for its tyres. The owner purchases himself new tyres or other retreaded tyres. Consequently, he does not receive its own tyres back. The inspection of suitability of the casings will in most cases take place on the premises of the owner, such as in the first case described.

After inspection are the casings for retreading transported to the retreading workshop. During this process, an extra prior inspection will be performed where a limited loss (a few %) will occur due to later appearing unsuitability of the tyre for retreading.

Only casings from Case I ("CoCs") will be considered as non-waste under the condition that they are separately collected from the tyres described in Case II.

UK
In the UK, the approach of the Environment Agency seems to be that the casings for retreading are still classified as waste up until/after the casing has actually been retreaded i.e. until the recovery operation is complete.

This non-harmonised application of the waste definition creates problems, both regarding the level playing field for operators and regarding legal certainty. It is detrimental to the development of the retreading business in Europe as retreading cannot be performed without transporting casings to the retread workshop and then back to the customer once retreaded. This is particularly patent in the truck & bus tyre market which is based on a "multiple life" model where the retreading activity is supporting the new tyre market.

Applicability of the Waste Framework Directive to sorting and retreading

The retreading process is a remanufacturing process by which the tyre, that was no longer useable because the minimum tread depth is no longer there, is processed to provide it with a new tread and continues to be used. The retreader takes over the product liability for the tyre. Retreading extends the

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[2] More than 10 years ago, the Commission Decision 2000/532/EC replaced the Decision 94/3/EC and substituted the past definition of 16 01 03 "Used Tyres" with a more appropriate "End of Life Tyres". This change was transposed into Italian law by Law 179/2002 art. 23 comma 1/l that modified "Pneumatici usati" with "Pneumatici Fuori Uso". In 2003, the D.M. 9/01/2003 excluded retreadable tyre casings from the list of non hazardous waste items (Annex I) that were indicated in D.M. 5/2/1998. Because of this, retreadable casings are considered as non-waste.

life time of the tyre and therefore it is not a recycling operation as defined in the waste framework Directive, but an industrial operation that contributes to waste prevention.

Since retreading is a remanufacturing process, the waste framework directive would define selection of casings that are suitable for retreading from waste tyres as an operation designated as preparation for reuse. After checking, the casings do not need any pre-processing but can be used in the remanufacturing process of the retreader. The company doing the selection would fall under the scope of the Waste Framework Directive.

The collection and sorting plants are operated under a permit for waste treatment, although the details of their permits vary across member states. For retreading plants the situation may differ per member state depending on the legal status of the casings taken in for retreading. In some member states the retreading operations are regarded as recovery of waste and the plants are operated under a permit for waste treatment. In member states where the casings are regarded being a product the retreading plant may still need a permit, but not under the waste legislation. The details of such permits vary across Member States. The impact on the retreading installations is described in chapter 3.

1.9.2 IPPC Directive

The European Directive on Integrated Pollution Prevention and Control (2010/75/EC) regulates the requirements for permits and operational conditions of industrial installations. Collection and sorting plants would not be falling under the IPPC directive.

A retreading plant would fall under the scope of the IPPC directive if it uses organic solvents with a consumption capacity of more than 150 kg per hour or more than 200 tonnes per year. This may be the case for the largest retreading plants in Europe. Also installations producing materials destined for energy recovery with a capacity of over 75 tonnes per day would be covered by the IPPC directive and would require a permit under the conditions specified in this directive and would have to respect specific operational conditions and requirements for emissions.

1.9.3 Transport of tyres and transboundary movements

Basel Convention
The Basel Convention is a worldwide convention that covers transboundary movement of hazardous wastes and other wastes. In principle, ELTs are not covered by the provisions of the Convention as they are not considered to be hazardous wastes. However, since a number of countries indicated concerns about unsound management of ELTs, the Convention has developed guidance on the environmentally sound management of ELTs. These guidelines do not have implications for the procedures the EU applies to exports of ELTs to third countries.

Waste Shipment Regulation
The EU Waste Shipment Regulation establishes the control procedures for transporting waste within, into and out of the EU. In the situation where casings are waste, the transboundary movements of those casing would have to follow the procedures of Waste Shipment Regulation (EC) N° 1013/2006. If they are destined for recycling or recovery they are falling under List B of Part I of Annex V (also referred to as the 'green list'), which are not covered by article 1.1.a of the Basel Convention, and therefore not covered by the export prohibition under the Basel Convention.

Exports of waste under the 'green list' within the OECD countries is not subject to the notification and consent procedure and is done as normal commercial transactions; however, the Regulation does require the completion of an Annex VII form. There is also a transitional period for a number of EU member states in Central and Eastern Europe that require a notification for exports of (certain) wastes

on 'green list'. These transitional periods will end in the period 2011 – 2016, depending on the country.

For exports of waste on the 'green list' to non-OECD countries, the Commission has requested those countries as to whether they will accept such waste and which procedure should apply in such cases. This may involve a procedure of written notification and consent prior to the shipment. This procedure is applied as default if the non-OECD country has not replied to the request of the Commission. Since only a limited number of countries accepted to follow the green-list procedure, all exports of waste tyres to other non-OECD countries need to follow a procedure of notification and prior written consent, or an equivalent national procedure designated by the country of destination. [3]
The notification and prior written consent procedure involves administrative activities, payment of a fee and also the establishment of a financial guarantee[4]. There are also non-OECD countries that prohibited the import of waste tyres.

In all cases the Regulation only allows exports to countries outside of the EU if the facility that receives the waste is operated in accordance with standards for protection of human health and the environment that are broadly equivalent to such standards applicable in the EU.

If casing for retreading that fulfil the end-of-waste criteria are a product the export to non-EU countries will not be under the waste shipment regulation unless the country of destination considers the casings as being waste (in case of disagreement, the more stringent status is applied). The impact on shipments is described in Chapter 3.

1.9.4 Product legislation

REACH
Waste are exempt from the provision of the REACH Regulation. Casings that are not waste would however be covered by this Regulation. They would be regarded as articles and the provisions of articles in REACH would apply to them. The implications of this are discussed in detail in Chapter 3. Apart from REACH the other relevant product legislation is included in the regulations UNECE 108 and 109 and the standards applicable for aircraft tyres as indicated in section 1.6. There is no other relevant product legislation.

1.10 Environmental and health aspects

Raw materials
Retreading prolongs the life-time of the tyre and therefore contributes to waste prevention. This results in a reduction of the use of raw materials and the amounts of waste that need to be treated.

CO_2
The following considerations would suggest a net saving of CO_2 emissions compared to the production of new tyres: less raw materials are needed (since the casing needs not to be manufactured again) and the retreading process also requires less energy.

Emissions from sorting
The emissions from the sorting activities are very limited. It is an activity that does not involve equipment other than logistic one.

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[3] See Commission Regulation (EC) No 1418/2007 of 29 November 2007 and http://ec.europa.eu/trade/wider-agenda/environment/shipment-of-non-hazardous-waste/questionnaire/

[4] A financial guarantee is not required in cases of shipment of 'green listed' waste to EU-member states which apply the notification procedure for this waste as a transitional measure.

Emissions from the retreading process (other than CO_2)
Emissions may occur during several steps of the retreading process. The buffing process will give rise to dust emissions. Repair of damage will be done with extruded rubber. The preparation of the casing before applying the new tread may involve the use of solvents, vulcanization agents, and bonding agents, that may generate emissions.

2 End-of-waste criteria

2.1 Rationale for end-of-waste criteria

The end-of-waste criteria should be such that the material has waste status if and only if regulatory controls under waste legislation are needed to protect the environment and human health; otherwise the material should have end-of-waste status to facilitate recycling and recovery. The criteria should be developed in compliance with the legal conditions, should be operational, should not create new disproportionate administrative burdens and should reflect that trading of casing suitable for retreading is a well-functioning industrial practice today.

The main types of benefits that can be expected should EU-wide end-of-waste criteria for casings suitable for retreading be introduced are given below:

- The retreading market becoming further professionalised, leading to improved quality, improved trust in the end product and ultimately further market take-up of the retreading technology
- Reverse of the current decreasing trend of the retreading market in the benefit of the environment
- Improved functioning of the internal market as simplified and harmonized rules are applied across countries and economies of scale.
- Reduction of administrative burdens, especially related to shipment and transport.

2.2 Conditions for end-of-waste criteria

According to the Waste Framework Directive, Article 6, '*certain specified waste shall cease to be waste within the meaning of point (1) of Article 3 when it has undergone a recovery operation and complies with specific criteria to be developed in accordance with the following conditions:*

a) The substance or object is commonly used for a specific purpose;
b) A market or demand exists for such a substance or object;
c) The substance or object fulfils the technical requirements for the specific purpose referred to in (a) and meets the existing legislation and standards applicable to products; and
d) The use of the substance or object will not lead to overall adverse environmental or human health impacts.'

Regarding the first two conditions, it is evident that a structured market for casings for retreading exists. There are agreed specifications between producers and customers. Any other use as for retreading is highly unlikely, due to the consistent high price of these casings. Therefore the risk that such casings would be landfilled, incinerated or granulated for recycling, either within the EU or in developing countries, is extremely low.

The third condition implies that end-of-waste criteria need to ensure that, at the point of ceasing to be waste, any technical requirement related to the use are fulfilled and the casings comply with applicable legislation and standards as product. This means that at the moment of end-of-waste, the casings

should fulfil the minimum criteria for being considered as retreadable.

From a life cycle point of view, retreading of casings has overall environmental benefits as it prolongs the functional life-time of a tyre, thus reducing the need to produce new tyres. This results in a reduction of emissions associated with the production of new tyres exceeding the emissions of the retreading process itself. The emissions of the retreading process itself are the same, regardless whether the material is a waste or not. Also outside the EU, process emissions do not depend on the waste status of the casings but only on the conditions under which the retreading process is applied.

The main areas where the waste status of the casings suitable for retreading can potentially make a difference for the environmental and health impacts are:

- Transport and trade (waste shipments)
- Administrative and regulatory burden on the retreading operation

If the material has the end-of-waste status it can in principle be transported by any transport undertaking and not only by those that are permitted to transport waste. The retreading facility would not need to have a waste license which would reduce the administrative burdens related to record keeping and reporting as well as burdens due to regulatory controls of the installation.

2.3 Outline of end-of-waste criteria

According to the JRC methodology guidelines, the ultimate aim of end-of-waste criteria is product quality and end-of-waste criteria will therefore usually include direct product quality requirements. In addition, a set of end-of-waste criteria may include elements that check product quality indirectly, in particular requirements on input materials and requirements on processes and techniques. Usually, there will also be supportive requirements on quality assurance and regarding the provision of information (e.g. on product properties and safe use).

The set of criteria as proposed in this outline was developed on the basis of the current practice used by companies that sort casings and the commercial practices of retreaders that buy casings from those sorting companies. These activities are covered by specific legislation as mentioned in part I. When legislative developments put new requirements on tyres or retreaded tyres this may have an impact on the suitability of casings for retreading. Also development in the market may be of influence on the way how tyre inspections could take place. For example, certain types of tyres already contain information on their properties in electronic form (RFID chips). For those tyres, a visual inspection may be replaced by checking this information with electronic readers. Such developments should be monitored and the end of waste criteria should be amended when legislative or market development require this.

2.4 Criteria on product quality

Product quality criteria are needed to check for direct environmental and health risks and if the product is suitable as direct input to final use i.e. a retreading process. The question if a casing is suitable for retreading is mainly an economic question. The retreader will only buy casings of types of tyres for which he knows a market exists. Most types of damage present on a casing can be repaired without negatively influencing the performance of the tyre. However, such repair always involves a certain cost. Whether or not the retreader would want to bear these costs depends on the market conditions at the time of purchase. However, there are certain characteristics of the casings that would clearly classify them as non-retreadable. The end-of-waste criteria are therefore defined in such a way that casings are considered as retreadable unless they have these characteristics.

For **all types of tyres,** casings shall <u>not</u> be accepted for retreading when showing any of the following damage:

- Visible damage resulting from overload or under-inflation;

- Non-repairable rubber cracking extending through to the casing
- Casing break-up;
- Oil or chemical attack (if appreciable);
- Damaged or broken bead core;
- Previous repairs of damage, outside specified injury limits.

Only **for aircraft tyres, truck tyres and bus tyres,** the product legislation as specified in regulation UNECE 109 and the regulations of the European Aviation Safety Agency (ETSO) require a marking. For those tyres, casing shall not be accepted for retreading without having:

- Been type-approved as indicated with the 'E' or 'e' mark;
- A (maximum) speed index;
- A (maximum) load index.

Retreading firms prepare individually specifications on injury limits and such limits may vary within the industry. The staff that inspects casings will be trained to allow them to recognize such injury limits. Often pictures of typical injuries are used in the training documentation to inform decisions on suitability for retreading. Examples of extracts of this material are included in Annex 2.

Proposed formulation of the requirement

Casings of tyres dismounted from any type of vehicle shall not be accepted for retread when showing any of the following damage:

- **Visible damage resulting from overload or under-inflation;**
- **Non-repairable rubber cracking extending through to the casing**
- **Casing break-up;**
- **Oil or chemical attack (if appreciable);**
- **Damaged or broken bead core;**
- **Previous repairs of damage, outside specified injury limits.**

In addition, casings of tyres dismounted from trucks and busses shall not be accepted for retread without having:

- **Been type-approved as indicated with the 'E' or 'e' mark;**
- **a (maximum) speed index;**
- **a (maximum) load index.**

Moisture content and cleanliness

Moisture content and cleanliness do not influence the retreading process. Therefore, specific requirements are unnecessary.

2.5 Criteria on input materials

The purpose of criteria on input materials is to check product quality indirectly. The end-of-waste criteria should allow as input only waste types for which it is practical to obtain casings in compliance with the product quality requirements. Since in principle tyres from all types of vehicles could be suitable for retreading it is not necessary to define criteria on input materials as to exclude certain types of casings as input materials for the sorting process.

2.6 Criteria on treatment processes and techniques

The purpose of criteria on treatment processes and techniques is to check product quality indirectly. When reaching end-of-waste status, the material must have gone through all necessary treatment

processes that make it suitable as direct input material for the retreading and allow for transporting, handling, trading and using the material without increased environmental and health impact or risks. The treatment processes to achieve this for casings suitable for retreading is a sorting process with visual inspection of the casing. Even though the retreading firm may use specified equipment such as holography or shearography to detect micro anomalies in the casing, this type of technology is not required to determine suitability for retreading by sorters. The only requirement is that sorting is performed by staff or under the supervision of staff that has had sufficient training to visually determine if casings meet the product quality requirements.

Proposed formulation of requirements:

Sorting should be performed by or under the supervision of staff that has had sufficient training to visually determine if casings meet the product quality requirements.

2.7 Quality assurance

Quality assurance is needed to crate confidence in the end-of-waste criteria. The producer of the material applying the end-of-waste status will have to rely on a quality assurance system to be able to demonstrate compliance with all end-of-waste criteria for the material to cease to be waste.
It is considered appropriate and proportional for end-of-waste criteria to require that a quality management system be implemented by casing providers. Since the companies that perform the sorting are often very small and may sort only a limited number of casings per year it is not considered proportional to require mandatory third party audits of the quality management systems in place. This would involve costs for audits that are disproportionate to the benefits the companies, often SMEs, may obtain from sorting the casings.

A suitable quality management system for economic operators involved in the selection of casings suitable for retreading is expected to include:

- Procedures referring to the selection criteria of this document and taking into consideration likely additional criteria/requirements (for example: specific customers requirements);
- Document control/Control of records/Training record (documents retention period, procedures issuance and review, records management)
- Adaptation of the Quality Management System to revised/new criteria

Proposed formulation of requirements:

The quality management system must at least include the following elements:

- **The quality management system must be auditable and competent authority must be able to verify during inspections under waste law to ensure that the system is suitable for the purpose of demonstrating compliance with end-of-waste criteria**

- **It must include a set of documented procedures addressing each key process relevant to compliance with the technical end-of-waste criteria, including:**

  a) **Procedures referring to the selection criteria of this document and taking into consideration likely additional criteria/requirements (for example: specific customers requirements)**
  b) **Document control/Control of records/Training record (documents retention period, procedures issuance and review, records management)**
  c) **Adaptation of the Quality Management System to revised/new criteria**

2.8 Information to supply with the product

The casing supplier of the material that invokes the end-of-waste status must keep for its own records and provide upon request information to the competent authorities/a customer (retreader, other casing supplier or user) that demonstrates that all end-of-waste criteria have been met. Such information may be provided electronically.

Proposed formulation of requirements:

Each consignment of casings suitable for retreading or multiple loads to the same customer shall either be accompanied by the following information or be made available upon request in electronic form to the customer or any competent authority:

- **Statement of conformity to the end-of-waste criteria**

3 IMPACTS

In order to evaluate the soundness of end-of-waste criteria, it is necessary to assess the possible impacts of removing the waste status from casings suitable for retreading.

The impact assessment covers environmental, economic and legal impacts that may result once the waste candidate ceases to be waste. Many member states have different operational rules and permits used for waste handling. Moreover, the waste definition is not applied in a harmonized way within the EU. As a result, since there are different existing approaches, the impact of end-of-waste would be different from Member State to Member State.

3.1 Environmental and health impacts

Retreading has an overall positive impact on the environment due to the extension of the life span of the tyres. Moreover, there is a combined impact of extension of the life span due to subsequent regrooving and retreading procedures. Promoting retreading by removing the waste status of casings suitable for retreading will therefore have an overall positive impact on the environment.
The waste status for casings suitable for retreading does not provide for additional environmental protection. Due to the residual value of the casings and actual market request, no economic operator would be tempted to (illegally) dispose of these casings. The waste legislation is therefore not necessary to assure that the casings are not representing a threat for the environment. Moreover, the retreading process would not be regulated in a way that would impose stricter emission limits.

Risks related to transportation and storage of casings suitable for retreading

The storage of casings does not differ according to their legal status. They should be stored in such a way that these conditions do not influence the retreadability of the casings. This does not depend on the question if the casings are waste or not.

Also for the transport and in particular for the transboundary movement, the removal of the waste status for casings would not change the trade patterns. Casings for retreading are traded across borders because there is a demand for such casings in the retreading industry. Retreading requires investing in industrial equipment. It cannot be done in an informal way without such equipment and by only using low cost labour in developing countries. Since these casing have a considerable value it is also very unlikely that casings that are selected as suitable for retreading would be exported to developing countries for landfilling. This would in all cases be more expensive than selling them to a retreader in Europe. Therefore there is very unlikely that removing the waste status of casing for retreading would result in eco-dumping in developing countries.

Certain countries have in the past been reluctant in accepting casings for retreading into their country. The most notable example was Brazil that has put import restrictions on casings in the past with the claim for environmental protection. This case was brought by the EU to the WTO as this was seen as a measure to protect national industry rather than for protecting the environment. Although WTO recommended Brazil to lift those measures as going against GATT rules, Brazil is still currently protecting its market from imports of used and retreaded tyres (except from Mercosur).

3.2 Economic impacts

The economic and market impacts are expected mainly due to the:

- the retreading market becoming further professionalised, leading to improved quality, improved trust in the end product and ultimately further market take-up of the retreading

technology

- avoidance of costs of handling casings for retreading in terms of permits and licenses;
- avoidance of costs related to the shipment of waste;
- benefits of harmonisation.

Professionalisation of the retreading market
Application of the end-of-waste criteria and in particular of a quality assurance system will help provide a further professionalisation of the sector. The companies will need to structure and formalise in a systematised way their operations.

Permits, licenses related to handling with EoW candidate as waste
The situation for waste collectors and processors regarding permits or licenses will not change. A relief is expected mainly for traders which will not need any waste licenses when they trade casings for retreading which has ceased to be waste as well as for the retreaders that would no longer have to be regarded as waste management operators.

For a relatively large installation it was calculated that the costs for upgrading the installation as regards fire protection, the additional costs for the procedures of obtaining a waste license and the costs related to additional regulatory pressure due to more frequent inspections would be in the order of 2% of production costs annually. For a small or medium sized company, this percentage would be even higher because they would have to hire specialized consultancy and some of the fixed costs related to upgrading the installation and inspections are to be borne by a smaller turnover.

Shipment
The waste status of casings for retreading affects the exportability by increasing the administrative and economic burdens. The largest costs are associated with exports for which a notification is required. This does not only imply a rather heavy administrative procedure, but also issuing of a financial guarantee that would cover take back of the tyres in case there is a problem with the export. For exports under the green list procedure the administrative burden is limited and there is no need to issue a financial guarantee. The shipment of green listed wastes to EU Member States requiring a notification during a transitional period do not require a financial guarantee (insurance). However, administrative fees for notification might be high and vary from country to country. End-of-waste would facilitate the free trade of the EoW candidate that meets the set end-of-waste conditions and criteria when exported in Poland up to 31 December 2012; Bulgaria up to 31 December 2014 and Romania up to 31 December 2015.

For most non-OECD countries, the export of casings would require a notification since only Cuba, Malaysia, Paraguay and Thailand indicated they want to receive waste tyres under the green list procedure. In addition to the direct administration costs associated with form filling, there is an issue of having to supply commercially sensitive data. Customers outside the EU jurisdiction unwilling to have their commercial transactions recorded and made available to public authorities and therefore also made available to their competitors. They may turn to non EU suppliers.

However, it must be noted that the amounts of casing for retreading that are traded outside of the EU is rather limited, so the impact of removing the waste status on trade outside of the EU is also limited, in particular because removing the waste status inside the EU does not imply that this will automatically be accepted by countries outside the EU.

Benefits from harmonization
The most important impact of the introduction of the end-of-waste criteria is the fact that quality management will be required for all companies. Apart from the fact that this will provide for a level playing field it will also have an impact that through the industry a further professionalisation will start. This will improve the competiveness of the sector in the long term.

It is very difficult to quantify the impacts and to indicate how much retreading will increase its market share due to the introduction of end-of-waste criteria. As indicated before, cost reductions are an important driver for promoting retreading, in particular for truck tyres. The current retreading ratio[5] in Europe for truck tyres is 35%. . In the US, where the situation comparable to having end-of-waste criteria in place is already implemented, the share is 100%. It is not said that the markets of the US and the EU are fully comparable, but it indicates that also for truck tyres retreading might still have considerable growth potential. Moreover, the professionalisation of the sector that will be the result of the introduction of end-of-waste criteria will lead to an over better performance of the retreading companies, better quality of the retreaded tyres and to restoring trust in the quality of the product. This combined impact of cost-reduction in improvement of performance and trust has the potential of giving the retreading sector new impetus.

Apart from the costs also, image is an important factor hampering retreading to regain market share that was lost over the last 20 years. The fact that retreading is no longer associated with waste management, but rather with a remanufacturing process may help to restore the image of the sector.

Removing the waste status of casings suitable for retreading will reduce administrative costs for the retreading firms. Economic considerations are the main limiting factor for further development of retreading in the truck tyre market. Due to the fact that costs are such a dominant factor limiting the market development, any measure that would reduce cost immediately provides for a competitive advantage for retreading and will thus promote retreading hence the importance of reducing administrative costs via the end-of-waste status.

3.3. REACH

ELTs are considered as waste which is out of the scope of REACH. Where casings suitable for retreading never became waste or would cease to be waste further to the application of end of waste criteria, REACH obligations would apply to those casings as with any other product. Under REACH, casings for retreading are identified as articles (as are new manufactured tyres) as it is an object which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition (Art. 3.3.of REACH)

REACH obligations related to substances in articles
Suppliers of articles, either as manufacturer or importer, have lighter duties under REACH compared to the manufacturers, importers & downstream users of substances.

Articles are subject to the notification/communication requirements listed in:

- Art. 7 on registration and notification of Substances of Very High Concern (SVHCs) in articles;
- Art. 33 on the duty on communication on substances in articles; and
- Art. 34 on the duty on communication on substances and mixtures up the supply chain.

These requirements are explained in more details below. In addition, articles put on the market will need to comply with REACH restrictions.

[5] Sales of Retreaded tyres / Sales of new replacement tyres + Retreaded tyres)

Registration and notification of Substances of Very High Concern (SVHCs) in articles

Registration of intentionally released SVHCs

Registration of substances in articles is obligatory if all of the following criteria are met:

1. The substance is intended to be released from the article(s) during normal and reasonably foreseeable conditions of use

2. The total amount of the substance present in the articles with intended releases exceeds 1 tonne per annum (tpa) per producer or importer

3. The substance has not already been registered for that use.

If an article has an accessory function, which is achieved through the release of substances or mixtures, then the release is to be regarded as intended.

In certain cases, the European Chemicals Agency (ECHA) may decide to impose the registration of any substance contained in an article if those substances are present in articles in quantities totalling over one tonne per producer or importer per year and if ECHA has grounds for suspecting that:

(i) the substance is released from the articles, and
(ii) the release of the substance from the articles presents a risk to human health or the environment;

Notification and communication obligations related to SVHCs in articles

Notification obligations related to SVHCs in articles
As regards the obligation to notify the presence of an SVHC, this applies to substances listed on the Candidate List (for Authorization) present in articles if certain conditions are fulfilled:

(a) the substance is present in those articles in quantities totalling over one tonne per producer or importer per year;
(b) the substance is present in those articles above a concentration of 0,1 % weight by weight (w/w) i.e. >1,000 ppm concentration

There are two cases when a notification will not need to be required:

1. if the producer or importer of articles can exclude exposure to humans or the environment during normal or reasonably foreseeable conditions of use, including disposal. Exposure to a substance in an article is possible even if the substance is not released from the article, but just on the surface of it. Therefore, a producer/importer wanting to demonstrate 'exclusion of exposure' has to ensure that the SVHC on the Candidate List does not come into contact with humans or the environment, regardless of its dangerous properties and taking all exposure routes at all life cycle stages into consideration.

or

2. If the substance has already been registered by a manufacturer or importer in the EU for that use.

Communications obligations related to SVHCs in articles
Any supplier of an article containing a SVHC in a concentration above 0,1% weight by weight (w/w) shall provide the recipient of the article with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance.

On request by a consumer, any supplier of an article containing a SVHC in a concentration above 0,1% weight by weight (w/w) shall provide the consumer with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance. This has to be done within 45 days of the receipt of the request.

Those communication obligations apply even in cases, where the total quantity of substance in the produced / imported article is below 1 tonne per year.

REACH Restrictions
Articles put on the market will need to comply with REACH restrictions.

Impact of the REACH obligations on companies identifying casings suitable for retreading
Regarding the obligation to register intentionally released SVHCs, it is quite unlikely that this would apply to tyres, hence to casings for retreading.

Regarding the obligation to notify SVHCs present in articles, it should be noted that, in case there is a notification requested, any of such substances included in tyres should already be notified by the original producer or importer of the tyre when it was first put on the market in the EU. There are no substances intentionally added to the tyre during use and disposal of tyres. The companies that identify casings suitable for retreading that were already on the market in the EU therefore do not have to notify any new SVHCs. but they are not freed from the notification obligations. For any casings that are imported into the EU as product, the importer would need to comply with notification requirements.

Regarding the obligations to provide information up the supply chain, it should be noted that the companies that identify casings suitable for retreading have to communicate the presence of SVHC according to Article 33.

4 CONCLUSIONS

Thanks to the support from the tyre companies involved in retreading, ETRMA has developed proposals for end-of-waste criteria for casings that:

- are in compliance with all the conditions given by Article 6 of the Waste Framework Directive;
- would be operational in practice; and
- would deliver clear benefits.

The main concerns that were raised, to different degrees by different experts, were about the implications and possible burdens of mandatory third party audits of the quality management systems put in place by the sorting companies. Since these companies are generally small and may sort only a limited number of casings per year, the costs of these audits would be disproportional for the sector. The criteria therefore propose a requirement that an 'auditable' quality management system should be in place, but does not require third party audits. The impact of REACH. was analysed in depth in the report.

- **It can be expected that the retreading sector will benefit strongly from harmonised, EU-wide end-of-waste criteria for casings suitable for retreading.**

Economic considerations are the main limiting factor for further development of retreading in the truck tyre market. Due to the fact that costs are such a dominant factor limiting the market development, any measure that would reduce cost immediately provides for a competitive advantage for retreading and will thus promote retreading hence the importance of reducing administrative costs via the end-of-waste status. The low penetration of retreaded tyres can also be explained by a lack of confidence in the product due to low professionalism of certain retreaders.

The introduction of harmonized EU-wide end-of-waste criteria will address both issues as it will lead to a higher level of professionalism in the sector and in reducing administrative burden and costs. It would therefore provide the retreaders with a better competitive environment and the markets lost in the last decades may be regained.

- **Environmental benefits**

Retreading extends the lifespan of tyres. This reduces the use of resources and the emissions related to production of new tyres are reduced. It is expected that there will be no adverse impacts on the environment further to the introduction of the end-of-waste criteria as the control regime under the waste status does not provide for additional environmental protection.

ANNEX 1 Examples of tyres not suitable for retreading

Since the sorting of tyres suitable for retreading is based on visual inspection only it is important that inspectors are trained to detect damage that would render a tyre unsuitable for retreading. The retreading companies have developed guidance manuals that instruct suppliers which aspects to check.

This annex includes some examples of pictures that are included in the guidance manuals. The pictures give clear illustrations that such damage that can be detected via visual inspection.

1. Casing rejected because of extensive deep rust in the tread grooves following the regrooving process.

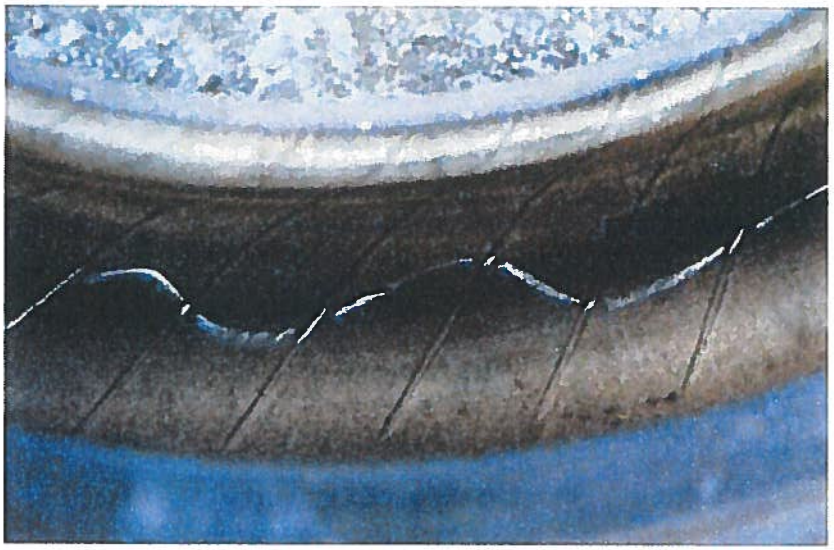
2. Example of casing rejected due to heavy deep rust which goes into the first, 2nd and possibly 3rd breaker. There are no patches big enough for repair.

3. Casing rejected due to deep excess rust

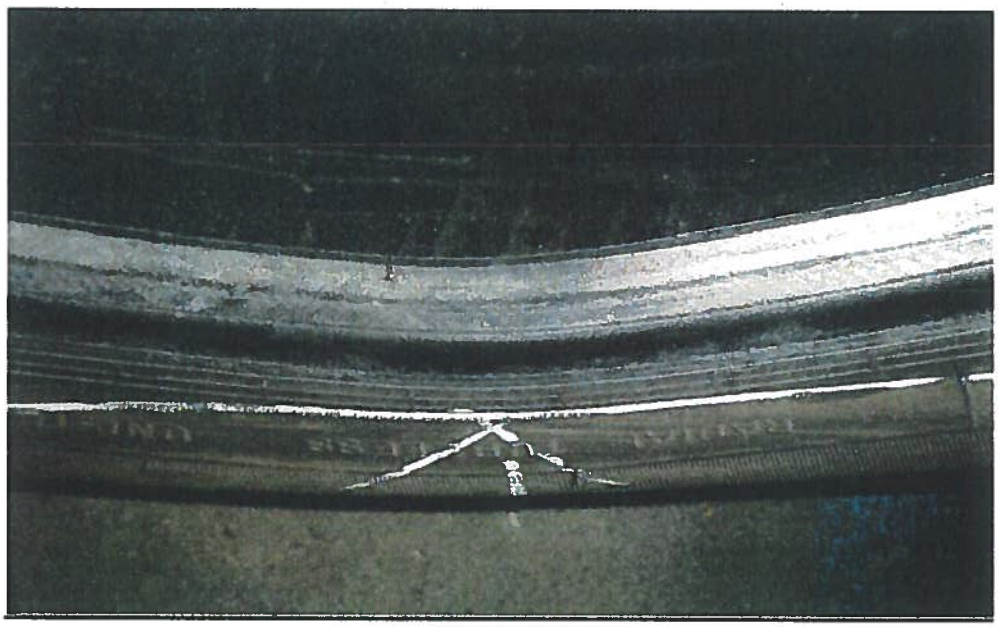
4. Casing rejected due to damage as deep as the wire breaker and damage on the belt edge.

5. Casing rejected due to sidewall undulations. The structure of the tyre is weakened and the tyre won't perform properly anymore.

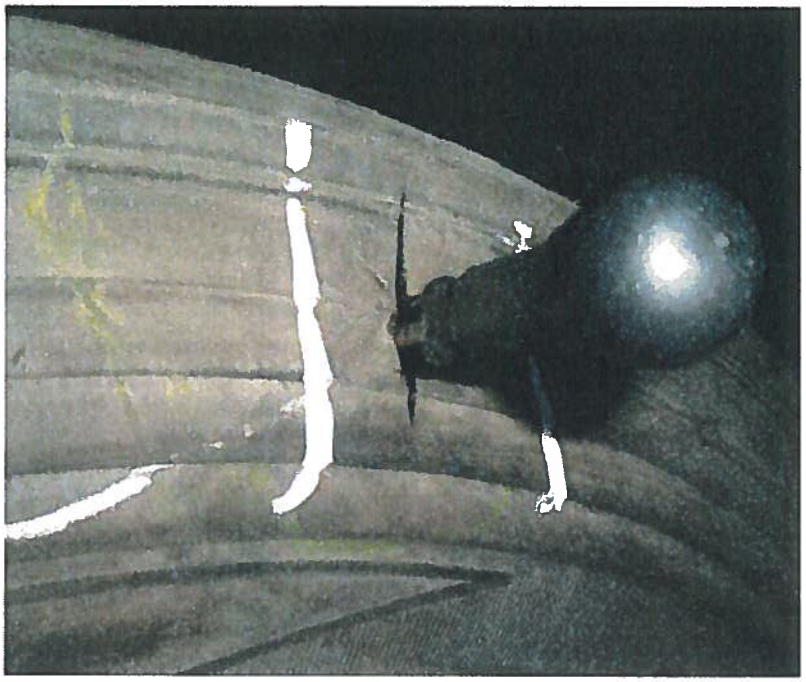
6. Casing rejected due to different types of undulation. The raised lumps indicate that the casing is extremely worn and weak.



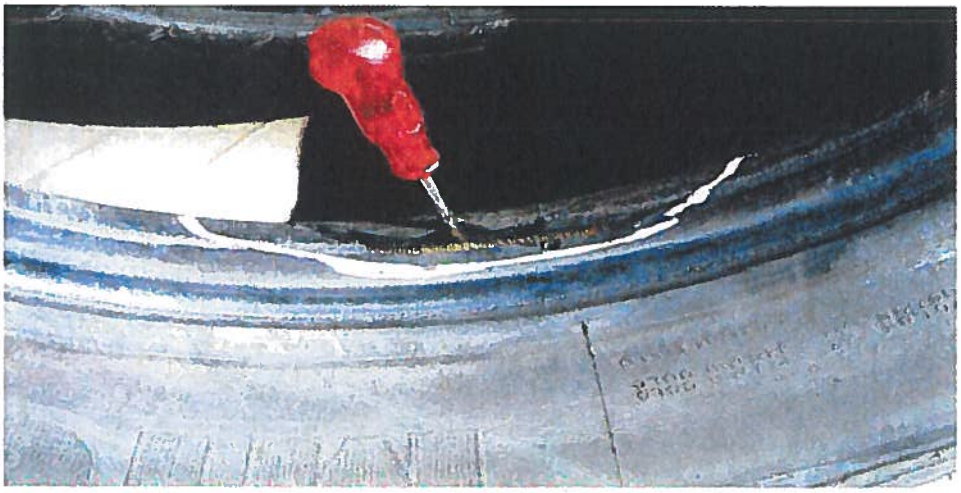
7. Casing rejected because of detected decolouration. The punctured tyre has run flat for a few hundred meters. The casing is damaged and has no strength anymore. Inside the tyre, loose rubber crumbs could also be detected.



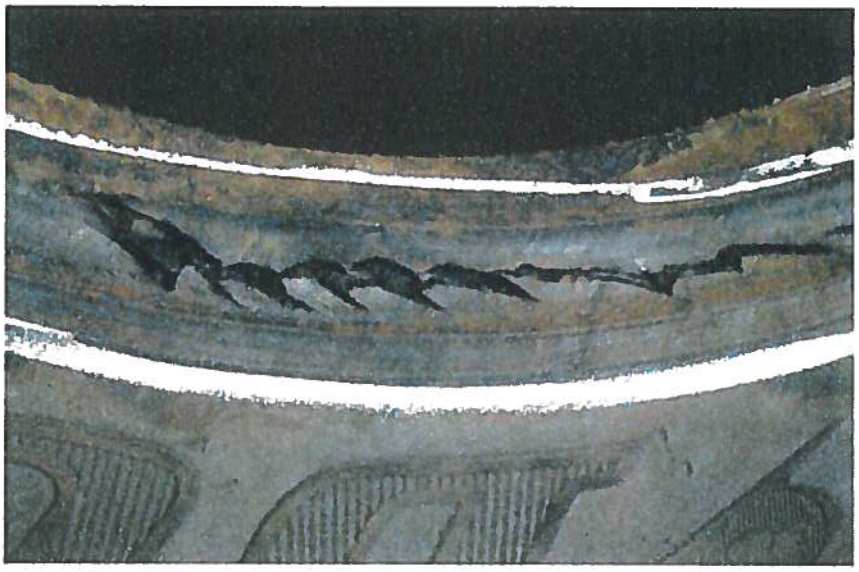
8. Casing rejected due to a distorted bead. There will be difficulty in inflating the casing. It won't retain air during the retreading process and will also deflate in service.



9. Casing rejected due to severe damage and cut in the sidewall. The ply inside is extensively damaged.



10. Casing rejected due to a torn bead. The actual bead area is exposed. If the tyre would be used for retreading, the tyre will have a zipper break (phenomenon of air migration). Although it could be possible to stick rubber on it, premature tyre blowout is expected in service.



11. Casing rejected due to severe cracking in the bead area caused by for example severe overloading or under-inflation. The damage is so severe that it is irreparable.

12. Casing rejected due to chemical contamination (e.g. oil). The contamination will impact the retreading process and create failure in service.

ETRMA Technical Report on End of Waste Criteria for granulates, powder and chips obtained further to the processing of the rubber fraction from tyres

– Final version – 10 September 2012

Preface

Since the mid 90's, the tyre industry has been active in taking action to organise the different players in the recovery chain with the creation of End-of-life tyres (ELT) management companies/associations at national level to collectively take responsibility for ELTs and organise its management chain.

Today, there are 14 ELT management companies working throughout Europe under the extended producer responsibility principle. These ELT management organizations, set up by tyre manufacturers, collaborate to:

- standardise technical specifications of materials derived from ELTs (rubber, steel, ...) and establish reference values so as to guarantee the same type and quality of product, regardless of the origin of ELTs

- develop sustainable applications which utilise the full potential of rubber properties

with the ultimate goal of positioning ELT-derived materials as a true resource, sustainably substituting raw materials in a host of applications.

The challenge is to define Community-wide end-of-waste criteria to turn more than 650,000 tonnes of ELT granulates, powder and chips into a true resource.

The aim of the report is to facilitate the work of policy makers in defining end-of-waste criteria for those end-of-waste candidates. It is based on the methodology developed by the JRC for the development of end-of-waste criteria.

It includes a comprehensive techno-economic analysis of ELT recycling chain, a proposed set of end-of-waste criteria as well as an analysis of the economic, environmental and legal impacts of granting the end-of-waste status to granulates, powder and chips throughout the EU.

The report has been produced by ETRMA based on the contributions of experts from its members and from ELT management companies.

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Glossary

Rubber Granulate: The result of processing rubber to reduce it to achieve finely dispersed particles, typically between 0.8 mm and 20 mm. Source: CEN TS 14243

Chip: The result of mechanical processes by which end-of-life tyres are fragmented, ripped or torn into irregularly shaped pieces of typically 10–50 mm in size. Source: CEN TS 14243
** N.B. For the end of waste status, the criteria proposed by ETRMA limits the max. size to 25mm (see Chapter 2)

Rubber Powder: The result of processing rubber and reducing it to achieve finely dispersed particles, typically under 0.8 mm. Source: CEN TS 14243

Used tyre: Tyre that has been subjected to any type of use and/or wear and which comprises ELTs and Part-worn Tyres.

End-of-life tyre: A waste tyre no more suitable for its original purpose.

Shredding: Any mechanical process by which tyres are fragmented, ripped or torn into irregular pieces of 20–400 mm in any dimension. Source: CEN TS 14243

Ambient grinding: Mechanical size reduction at or above ordinary room temperature.

Cryogenic grinding: Size reduction at low temperature using liquid nitrogen or commercial refrigerants to make the rubber brittle. Source: Basel Convention Technical Guidelines for the Environmentally Sound Management of Used Tyres

Waste: any substance or object which the holder discards or intends or is required to discard [EU Waste Framework Directive 2008/98 EC]

Recycling: any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations. [EU Waste Framework Directive 2008/98 EC]

ABBREVIATIONS

CPD	Construction Products Directive
ECHA	European Chemicals Agency
ELT	End-of-life Tyre
EoW	End-of-waste
EPDM	Ethylene propylene diene monomer (M-class) rubber, a type of synthetic elastomer
ETRMA	European Tyre & Rubber Manufacturers Association
EU	European Union
IPPC	Integrated Pollution Prevention and Control
JRC-IPTS	Joint Research Centre – Institute for Prospective Technological Studies
LCA	Life-cycle Assessment
OECD	Organisation for Economic Cooperation and Development
PAH	Polycyclic Aromatic Hydrocarbon
REACH	Registration, Evaluation, Authorisation and Restrictions of Chemicals
SVHC	Substance of Very High Concern
TPE	Thermoplastic Elastomers
WFD	Waste Framework Directive (Directive 2008/98/EC)

Introduction

Background

According to Article 6(1) and 6(2) of the Waste Framework Directive (WFD) 2008/98/EC, certain specified waste shall cease to be waste when it has undergone a recovery operation and complies with end of waste criteria. End-of-waste specific criteria that provide a high level of environmental protection and an environmental and economic benefit should be considered, among others, at least for aggregates, paper, glass, metal, tyres and textiles (Art 6(2) of the WFD).

As mandated in the WFD, the European Commission should be preparing proposals for end-of-waste criteria for specific waste streams according to the legal conditions and following the JRC methodology guidelines[1]. As part of this work, JRC-IPTS should conduct a study with the aim to prepare technical proposals for tyres.

Aim and objectives

Any proposal by the European Commission of end-of-waste criteria needs substantial technical preparation. Therefore ETRMA has produced this report with the help of End-of-life tyre experts from ETRMA member companies and ELT management companies as a contribution to help JRC-IPTS develop technical proposals on end-of-waste criteria for granules, powder and chips obtained further to the processing of the rubber fraction from tyres in conformity with Article 6 of the WFD.

The report was guided by the methodology for setting up end-of-waste criteria that was developed by the JRC-IPTS . The structure of this report has been largely inspired from the first Technical Proposals on End of waste criteria for iron and steel scrap which led to the publication of the first EU regulations on End of waste criteria.

This report is not intended to replace the assessment by the EU Commission, which includes work in a Technical Working Group composed of experts from Member States and involving experts from all relevant stakeholders, but to facilitate and expedite this work. Member States and other stakeholders may wish to review the document. This could be done during the process of further development of the criteria, to be initiated by the EU Commission.

[1] A methodology guideline to develop end-of-waste criteria has been elaborated by the Joint Research Centre Institute for Prospective Technological Studies (JRC-IPTS) and is documented in Chapter 1 of the JRC "End-of-Waste Criteria" report http://susproc.jrc.ec.europa.eu/documents/EndofwastecriteriaFinal.pdf

1 Analysis

The development of end-of-waste criteria requires consideration of the characteristics of waste streams, the structure of the industry, the economics, market situation and trade flows, the existing regulations and standards/specifications, and the environmental and health aspects. The following sections look at these issues throughout the entire recycling chain of end-of-life tyres.

1.1. Material sources

An end-of-life tyre (ELT) is defined as "A waste tyre no more suitable for its original purpose".

Stages in the Life of a tyre

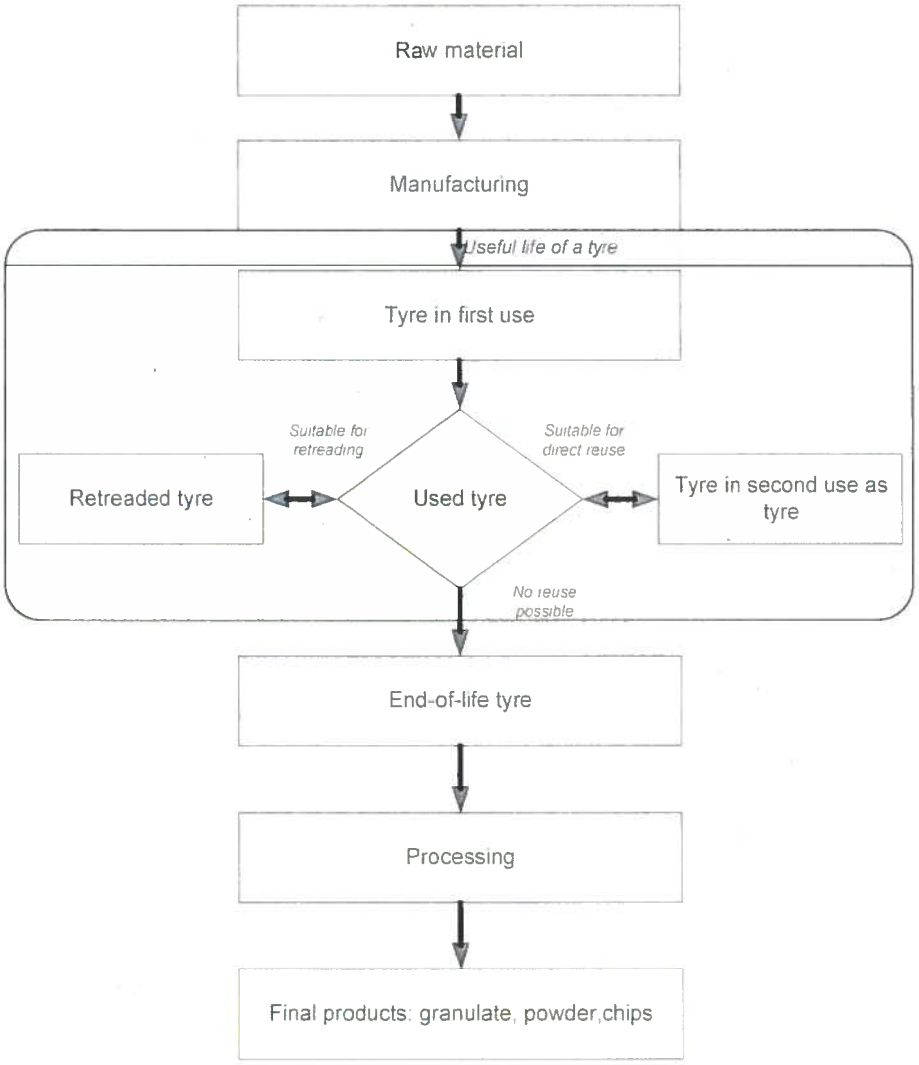


Figure 1: stages of the production, use and waste management of tyres

1.1.1. Tyre production and composition

Tyre production

Tyres are essential to road mobility, fitted on our many transport vehicles and being the only contact point with the ground. Simple in appearance, tyres are in fact very sophisticated products. A typical tyre includes dozens of different components, using more than one hundred primary raw materials, which must be precisely assembled and processed to achieve the right balance between many competing factors of which grip, energy efficiency, handling, comfort and noise are but a few.

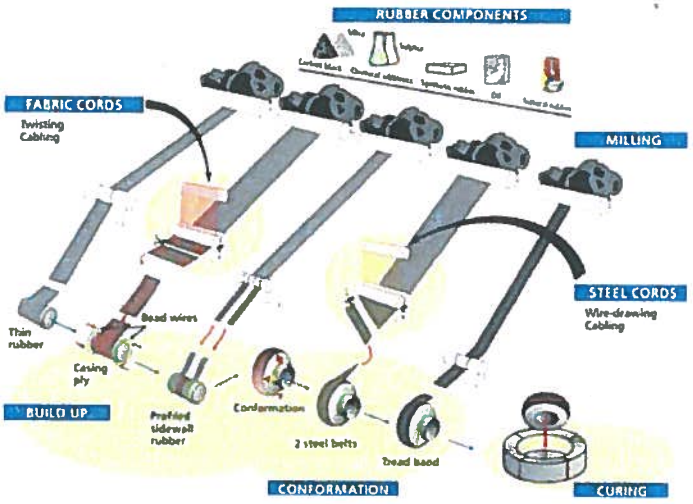


Figure 2: Tyre manufacturing process. Source: Michelin

Main tyre components

Tyres are made up of various components, which include several parts, types of steel and rubber compounds.

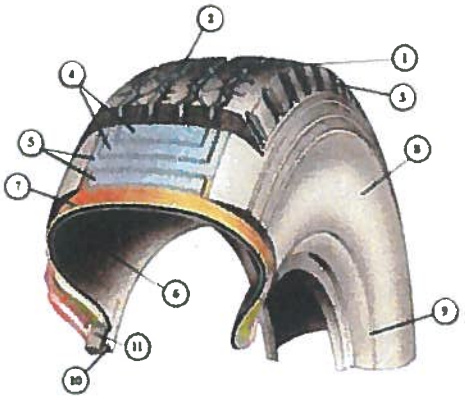


Figure 3 – Components of a tyre

184 **"Tread" (1)** means the part of a pneumatic tyre that is designed to come into contact with the ground.

185 **"Tread groove" (2)** means the space between the adjacent ribs or blocks in the tread pattern.

186 **"Sidewall" (3)** means the part of a pneumatic-tyre between the tread and the area designed to be
187 covered by the rim flange.

188 **"Ply" (4, 5)** means a layer of "rubber" coated parallel cords. In the radial tyre, it has the purpose of
189 stabilizing the tyre.

190 **"Cord" (6)** means the strands forming the fabric of the plies in the pneumatic-tyre.

191 **"Carcass/Casing" (7)** means that structural part of a pneumatic tyre other than the tread and
192 outermost "rubber" of the sidewalls which, when inflated, supports the load.

193 **"Section width" (8)** means the linear distance between the outside of the sidewalls of an inflated
194 pneumatic-tyre, when fitted to the specified measuring rim, but excluding elevations due to labelling
195 (marking), decoration or protective bands or ribs.

196 **"Belt" (9)** applies to a radial ply or bias belted tyre and means a layer or layers of material or materials
197 underneath the tread, laid substantially in the direction of the centre line of the tread to restrict the
198 carcass in a circumferential direction.

199 **"Bead" (10)** means the part of a pneumatic tyre that is of such shape and structure as to fit the rim and
200 hold the tyre onto it.

201 **"Chafer" (11)** means material in the bead area to protect the carcass against chafing or abrasion by the
202 wheel rim.
203
204 **Main sources of used tyres for collection and reuse/recovery**

205 Based on the Europool 2011 figures for the tyre replacement market in Europe (tyre units from
206 ETRMA members without imports) and industry estimate for the tonnage, the main tyre markets are,
207 in order of importance:

Tyre category	% in volume (number of units)	% (by weight)
Passenger car* tyres	91%	70%
Truck & bus tyres (Medium & Heavy truck)	4%	16%-20%
Tyres from motorbikes, scooters	4%	1%
Agricultural tyres	1%	6%-8%
Aircraft tyres	N/A	< 0.5%
Civil engineering tyres	N/A	N/A
Industrial tyres (pneumatic)	N/A	N/A
Industrial tyres (massive tyres and banding)	N/A	N/A

* + trailers and caravan tyres, tyres from 4x4, SUV, Van & light commercial vehicles

Source: ETRMA

208

209 **Main sources of rubber suitable for the production of granulates, powder and chips**
210
211 Included in the sources of rubber suitable for processing into granulates, powder and chips:
212
213 - End-of-life tyres
214 - Cured rubber waste
215 - resulting from the manufacturing of new tyres (e.g. tyres that after production are tested and
216 fail to meet the product standards)

- from the tyre retreading process (e.g. buffings)

Excluded from the sources of rubber suitable for processing into granulates, powder and chips:

- Production scraps containing uncured rubber
- Production scraps containing rubber from other applications than tyres (for example, General Rubber Good (GRG) products).

Table 1: Examples of waste categories according to the European Waste List that contain rubber suitable for processing into granulates, powder and chips.

Waste code and description	***Possible sources for these materials***
Waste from the manufacturing, formulation, supply and use of plastics, synthetic rubber and man-made fibres 07 02 99 waste not otherwise specified	Cured rubber production residues of tyre manufacturing, buffings and other residues from retreading; Tyres from manufacturing and retreading that after production are tested and fail to meet product standards
End-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13, 14, 16 06 and 16 08) *16 01 03 end-of-life tyres*	Tyres from passenger cars, trucks, busses, aircraft, agricultural vehicles, bicycles, motorcycles, etc

231 **Tyre composition**
232
233 Main components used in the formulation and production of new tyres are
234

Material	Source	Application
Natural Rubber	Natural rubber is predominantly obtained from the sap of the *Hevea brasiliensis* tree	Generally Natural rubber currently accounts for about 30% to 40% of the total elastomeric part in a car tyre and 60% to 80% of a truck tyre
Synthetic Rubber	All synthetic rubbers are made from petrochemicals	Generally synthetic rubber accounts for about 60% to 70% of the total elastomeric part in a car tyre and about 20% to 40% of a truck tyre
Steel cord and bead wire including the coating materials and activators, brass/tin/zinc.	The steel is premium grade and is only manufactured in a few plants around the world due to its high quality requirements	Steel is used to provide rigidity and strength to the tyres
Reinforcing fabrics	Polyester, rayon or nylon	Used for structural strength of the carcasses of car tyres
Carbon black, amorphous silica	Carbon black is derived from oil stock. Amorphous silica is obtained from silicon mineral and sodium carbonate. It may have natural or synthetic origin	Carbon black and silica provide durability and resistance against wear and tear
Zinc oxide	Zinc is a mined mineral or also derived from recycled zinc, which then undergoes a production process to produce zinc oxide	Zinc oxide is added essentially as vulcanization activator. After vulcanization it is present as bound zinc in tyres
Sulphur (including compounds)	A mined mineral or extracted from gas or oil	Main actor of vulcanization
Other additives and solvents age resistors, processing aids, accelerators, vulcanizing agents, softeners and fillers	Synthetic or natural source	The other additives are used in the various rubber compounds to modify handling manufacturing and end-product properties
Resorcinol Formaldehyde		Components of the adhesive systems used for bonding rubber to the textile fibres and for improving the adhesion between rubber and the brass plated steel belt
Oils Aromatic oil*, MES (special purified, aromatic oil), Naphthenic oil, TDAE (special purified aromatic oil) , Paraffinic oils		Oils are added to the rubber compound in the factory during the manufacturing process or added to purchased rubbers to improve the processability of the compounds. Additionally, the tread rubber compound achieves improved performance characteristics, mainly wet grip but also other characteristics like wear and endurance

Other additives and solvents Heterocyclic compounds, Phenylene-diamine derivatives, Phenolic stabilizers, Sulphenamides, Guanidine derivatives, Thiazoles, Dithiophosphates, Thiurams, Dithiocarbamates, Thioureas, Others	Synthetic or natural sources	Other additives are used in the various rubber compounds to modify handling, manufacturing and end-product properties. Age resistors, processing aids, accelerators, vulcanizing agents, softeners and fillers

Source: Adapted from "A National Approach to Waste Tyres", 2001 and ETRMA, 2001 and State of knowledge report for tyre materials and tyre wear particles, ChemRisk Inc, July 30, 2008.

*N.B. Restrictions on the marketing and use of high aromatic oils (also called PAH-rich oils) for the production of tyres placed on the EU market apply since 1 January 2010 (see REACH regulation 1907/2006 Annex XVII, entry 50)

Passenger car tyres and truck tyres being the biggest source of ELTs, both kinds of tyres will be described in terms of their difference in composition.

Table 2 - Main components of passenger car and truck tyres (in %)

Material	Car	Trucks
Rubber/Elastomers	43%	42%
Carbon black & silica	28%	24%
Metal	13%	25%
Textile	5%	-
Zinc oxide	2%	2%
Sulphur	1%	1%
Accelerators/antidegradants	2.5%	N/A
Stearic acid	1%	N/A
Oils	7%	N/A

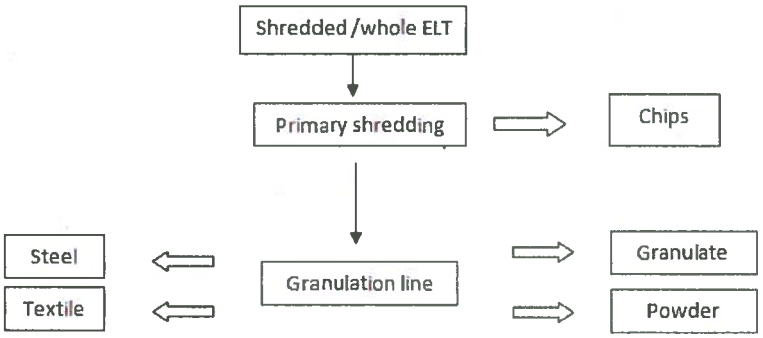
Source: ETRMA (2001 BLIC LCA on Passenger Car tyres) & Personal communication from tyre manufacturers of truck tyres (UNEP Technical guidelines on the environmentally sound management of used tyres (2011).

Both tables show that new truck tyres contain more natural rubber as a proportion, relative to synthetic rubber, than do passenger car tyres, more steel and no textile.

1.1.2. ELT derived materials

The main categories of materials from end-of-life tyres produced at different stages of the treatment process, primarily by size reduction, are as follows: cuts, shreds, chips, granulates, powders, steel and textiles. In the scope of this Technical Report, only chips, granulates and powders will be described.

Scheme of a typical shredding/granulation process



1.1.3. Elemental composition and reference values of rubber granulates

the elemental composition of granulates, powder and chips will differ from the initial tyre recipe. Aliapur (www.aliapur.fr) has conducted extensive work on the characterization of products from end-of-life tyres – notably rubber granulates – for which reference values have been established and which demonstrate that ELT granulates can be considered as homogeneous products.

Those reference values have been scientifically derived based on a representative sampling of granulates. Six tonnes of material have been collected by batch from four granulation plants using different production techniques (by sequential shredding, by mechanical and cryogenic grinding). The samples were analyzed according to standardized methods, producing detailed & comprehensive reports. Aliapur has synthesized these data into several "technical characterization fact sheets" (see http://www.aliapur.fr/RD-recovery/materials/granulates) which relate to :

- Samples and sampling
  http://www.aliapur.fr/media/files/RetD_new/Conferences_Publications/Aliapur_Samples_and_sampling_granulates.pdf
- The elemental composition
  http://www.aliapur.fr/media/files/RetD_new/Conferences_Publications/Aliapur_Elemental__composition.pdf
- The particle size distribution
  http://www.aliapur.fr/media/files/RetD_new/Conferences_Publications/Aliapur_Particle_size_distribution.pdf
- Residual wire content
  http://www.aliapur.fr/media/files/RetD_new/Conferences_Publications/Aliapur_The_residual_wire_content_in_granulates.pdf
- Residual textile fibre content
  http://www.aliapur.fr/media/files/RetD_new/Conferences_Publications/Aliapur_Residual_textile_fibre_content_in_granulates.pdf

- The morphology
  http://www.aliapur.fr/media/files/RetD_new/Conferences_Publications/Aliapur_The_morphology_of_granulates.pdf
- The macroscopic surface condition
  http://www.aliapur.fr/media/files/RetD_new/Conferences_Publications/Aliapur_The_macroscopic_surface_state_of_granulates.pdf
- The microscopic surface condition
  http://www.aliapur.fr/media/files/RetD_new/Conferences_Publications/Aliapur_The_microscopic_surface_state_of_granulates.pdf

Extraction and sampling of ELT granulates

An extraction and sampling methodology fact sheet is essential as it is the starting point of all other fact sheets characterizing ELT granulates. Indeed, the definition of validated methods is the basis of any process of analysis since it avoids sampling biases. An extraction and sampling protocol aims to generate perfectly reliable samples, that is to say exactly representing a batch of granulates regardless of the type of analysis to perform (a few hundred grams, a few grams, milligrams).

The elemental composition of ELT granulates

Currently, there are no specific standards for chemical analysis of materials from ELTs. Hence methods already proven in the rubber industry were selected or adapted, allowing to know the elemental composition of the granulates in order to establish baseline reference values. In first approximation, those results are also applicable to rubber powder. Those reference data can be used for all uses of granulates and powder.

Elemental composition of ELT granulates

Aliapur study

	% mass	
Main elements (>1%)		
	Min	***Max***
Carbon (C)	78%	82%
Hydrogen (H)	7%	7,50%
Oxygen (O)	2,80%	3,20%
Zinc (Zn)	1,60%	3,10%
Sulphur (S)	1,10%	2,10%
Silicon (Si)	1%	2,30%
	Min	***Max***
Minor elements (<1%)		
Nitrogen (N)	0,30%	0,50%
Calcium (Ca)	0,09%	0,53%
Iron (Fe)	0,02%	0,20%
Trace elements (<0,06 %)	***Min***	***Max***
Aluminium (Al)	0,0300%	0,0600%
Antimony (Sb)	0,0006%	0,0009%
Bromine (Br)	0,0200%	0,0400%
Cadmium (Cd)	0,0200%	
Chlorine (Cl)	0,0200%	0,0600%

Cobalt (Co)	0,0090%	0,0600%
Copper (Cu)	0,0020%	0,0200%
Tin (Sn)	0,0005%	
Magnesium (Mg)	0,0300%	0,0500%
Phosphorus (P)	0,0100%	0,0300%
Lead (Pb)	0,0020%	0,0040%
Potassium (K)	0,0300%	0,0600%
Sodium (Na)	0,0300%	0,0600%
Titanium (Ti)	0,0040%	0,0100%

Trace elements (<0,001 %) of which some values are at LQ (Limit of Quantification)	
Selenium (Se)	0,0009%
Arsenic (As), Barium (Ba), Chromium (Cr), Manganese (Mn), Beryllium (Be), Molybdenum (Mo), Nickel (Ni), Vanadium (V)	0,0006%
Mercury (Hg)	0,0001%

Trace elements (<0,002%) whose values are at LQ (Limit of Quantification)	
Fluorine (F)	0,0020%
Thallium (Tl)	0,0001%

Results show that carbon, hydrogen & oxygen represent 90% of the ELT granulates mass. Adding the mass of zinc, sulphur & silicon provide 96% of the total mass of ELT granulates.

1.2. Uses of granulates, powder and chips obtained further to the processing of rubber from tyres

ELT granulates, powder and chips are used in a wide range of applications to manufacture end products but also in processes as raw materials.

ELT granulates

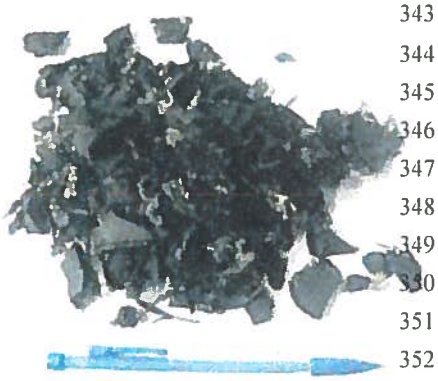
ELT granulates have a wide variety of possible applications and size range. They can be used as filler in artificial sport fields (size range between 0.5 and 2.5mm for synthetic turf), soft children playgrounds (size range between 2.5mm and 5 mm), plain rolls, acoustic protections, etc. ...

ELT powder

ELT powder is for example used in asphalt rubber applications (bituminous mixtures), carpet underlay and floor tiles, moulded products (tiles, street furniture and level-crossing platforms).

ELT chips

Main non-destructive applications of ELT chips is in mulch (landscaping, various horticultural applications), equestrian floors and pathways (i.e. rubber mixed with sand or sawdust used in the horse industry as ground in the stable or at the tracks) and as a sub-base for children playgrounds.



Source: Aliapur

The use of ELT granulate and powder (See Figure 2) has been characterized according to the volume of ELT granulate used per country and the number of countries where a market for such applications does exist (Marginal vs. Leading applications).

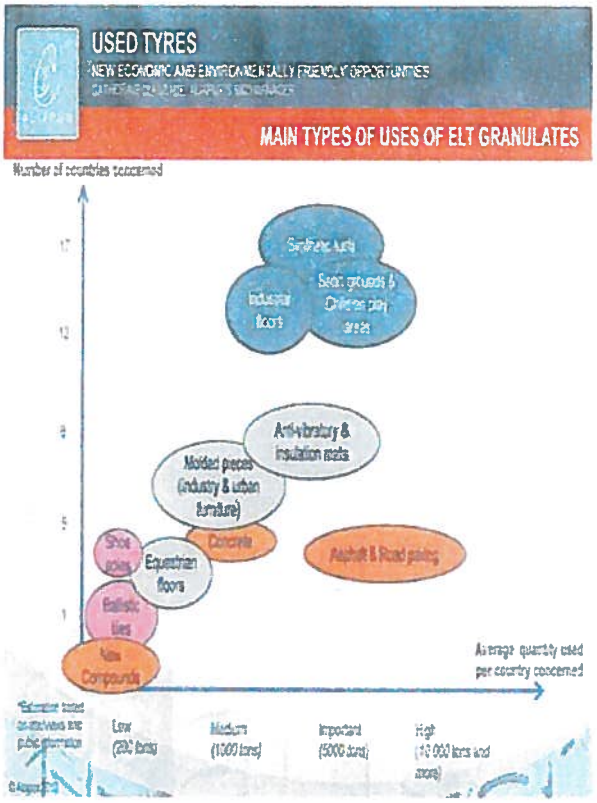


Figure 2: ***Source: Aliapur Comparative study on the Use of ELT granulates in Europe (December 2009)***

Leading applications of ELT granulates are synthetic turfs, industrial floors, sport surfaces and children playgrounds. Asphalt and road paving, concrete and new compounds are applications with developing markets whilst equestrian floors, moulded pieces (industry & urban furniture), anti-vibrating and insulation mats are emerging applications.

1.2.1. Children playgrounds, sport surfaces & synthetic turf

The elastic and noise reducing properties of the granulate is used when building playgrounds for children and athletic tracks as well as other sport surfaces (such as e.g. equestrian floors). The granulate is mixed with polyurethane and the top layer often dyed.

ADVANTAGES
Resistance to any climate condition (sun, rain, snow) and unaltered for it
No substantial change in behaviour at different temperature
Best head injury criterion (HIC)[2] during time of use
Easy to build and low maintenance

[2] The Head Injury Criterion (HIC) is a measure of the likelihood of head injury arising from an impact. The HIC can be used to assess safety related to vehicles, personal protective gear, and sport equipment.

When used as infill material in synthetic turf, the rubber granulate is substituting virgin materials such as EPDM and TPE. It is used for all kind of contact sports like soccer, American football and hockey.

Artificial soccer turf is highly recommended by e.g. FIFA because of its high performance with respect to ball behaviour, maintenance economy, lack of water dependency, etc.

Rubber granulate in artificial turf is used in two ways: as filler in artificial sport fields (see Figure 1) and/or in the manufacturing of the shock absorbing pad [3]

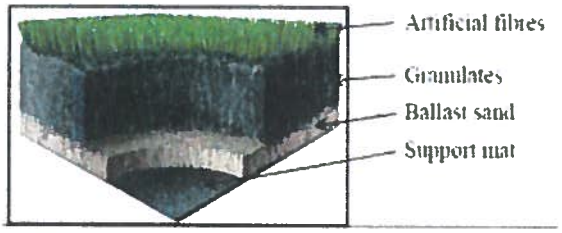


Figure 1 Vertical cross-section of a 3rd-generation sports surface (FIELDTURF TARKETT document)

They are either built up on the spot (in-situ) or from prefab mats. A standard artificial turf pitch contains 150 tonnes of rubber granulate infill material. If an elastic pad is added another 20-30 tonnes of rubber granulate is used.

Advantages compared to natural grass fields
Resistance to any climate condition (sun, rain, snow) and unaltered for it
No substantial change in behaviour at different temperature
Low cost construction and best balance of properties and price
Easy to build and low maintenance
More frequent playability and all-weather availability
Safe

See also: http://www.fifa.com/aboutfifa/organisation/marketing/qualityprogramme/footballturf/index.html and http://www.fifa.com/mm/document/footballdevelopment/footballturf/01/59/44/73/fqc_brochure_en.pdf

1.2.2. Bituminous mixtures / Asphalt Rubber

Granulated materials obtained from ELTs have been used in the development of rubber-modified asphalt in the United States, Western Europe and Brazil.

Rubber power (0-0.8mm) is used for the production of modified asphalt to reduce cracking and rutting, hence prolong pavement service life, thanks to the visco-elastic properties of the modified binder and the antioxidant effect of the additives present in the compound. The addition of rubber to the bituminous conglomerates provides quieter pavement and improves the tyre grip reducing the breaking distance. International experiments have demonstrated the possibility to make draining asphalts and/or traditional pavements characterized by a better durability and ageing resistance.

There are two main processes for producing rubber asphalt, i.e. the wet process and the dry process.

[3] For some types of games, a resilient underpad made of bound granulates is placed beneath the turf and upon the firm ground support surface to provide a shock absorbing effect.

In the dry process, ELT rubber granulate/powder is added directly into the asphalt and there is some reaction between the rubber and the bitumen. This process, however, is limited to the application for hot mix paving projects, and is not a suitable method for surface treatments.

In the traditional wet process, ELT rubber granulate/powder rubber is used as a bitumen modifier. It is blended with bitumen before the binder is added to the aggregate. Powder < 1mm is commonly used and the ASTM D6114 standard specifies a dimension <2.36 mm. Material should be heated to between 170 - 190°C during blend with the binder before compaction. The wet process has demonstrated to have better physical properties compared to the dry process because of the positive rheology of the binder.

In Europe, about one percent of rubber granulates is used for highway surfacing. In some countries however, such as in Portugal and Spain, the asphalt rubber market is more mature (with respectively 11% & 8% of the uses of ELT granulates in 2010 but a severe drop in 2011 in Portugal to 0.5% due to the stoppage of road building & maintenance in Portugal and the contraction of the economy)

A recent, peer-reviewed, life cycle assessment study has further documented the environmental benefits of asphalt rubber (DTC & IFEU 2008).

In the USA, the use of rubber in asphalt is highly regional based upon the standards developed by each individual state. In states where asphalt rubber is routinely used, the percent of tyre being used in the application ranges from 10-85%.

1.2.3. Insulation materials

Rubber granulate, bonded with polyurethane resins, is used to produce soundproofing panels, anti-poaching mats, waterproofing membranes, as well as anti-vibrating and anti-seismic materials specially appreciated for the rubber elastic properties.

1.2.4. Moulded objects

ELT rubber granulates, bonded with polyurethane resin or in combination with other thermoplastic polymers, have many applications in moulded objects, in particular as urban furniture such as speed ramps, signalling posts and accessories for equipping cycle tracks.

If granulates are shredded even more finely and then dried to remove all traces of humidity, they become ELT rubber powder. This powder is combined with a vulcanisation agent and then homogenised in kneading machines.
The resulting mixture is then poured into preformed presses and vulcanised in the form of bandages. In this way, it is possible to manufacture mainly wheels for waste containers, as well as casters for scaffolding, wheelbarrows, hand trucks or high pressure cleaning equipment.

1.2.5. Use in railway-tramway applications

The rubber granulate (0,8 – 2mm) added in a variable quantity to the bituminous conglomerate can be used for railway-tramway sub-ballasts but also for anti-ice conglomerates.
Recent developments have also enabled, the construction of large pieces of rubber granulates joined together with a polyurethane resin to isolate the railway from the nearby buildings.

1.2.6. Recycling in compounds

Micronized rubber powder are recycled into new compounds for the production of technical items in variable quantity (%) according to the requested performance of the final product.
Applications are for example shoe soles or car mats.

1.2.7. Devulcanization/Reclaim

Reclaiming is a procedure in which tyre rubber is converted – using mechanical processes, thermal energy and chemicals – into a state in which it can be mixed, processed, and vulcanized again.

Reclaim rubber is defined as devulcanized rubber that has regained its viscosity as well as the characteristics of the original compound. Devulcanization consists in cleaving intermolecular bonds of the chemical network, such as carbon-sulphur (C-S) and/or sulphur-sulphur (S-S) bonds.

These bonds confer durability, elasticity and solvent resistance to tyres.

In principle, devulcanization could be used to produce a product substituting for virgin rubber.

Major uses of reclaim rubber are in extruded and calendared products. It is also used to a lesser extent as raw material for new tyres manufacturing due to current technological limitations.

Devulcanization involves two different steps, i.e. size reduction and cleaving of the chemical bonds, which can be achieved through different processes with costs and technologies that are quite differentiated, i.e. chemical, ultra-sound and microwave.

The chemical devulcanization process is a batch process where reduced particles (between 10 and 30 mesh) are mixed with reagents in a reactor at a temperature of approximately 180° C and a pressure of 15 bars. Once the reaction is over, the product is filtered and dried to remove undesirable chemical components, and packaged for commercialization.

In the ultrasonic process, reduced rubber particles (between 10 and 30 mesh) are loaded into a hopper and subsequently fed into an extruder. The extruder mechanically pushes and pulls the rubber. This mechanical action serves to heat the rubber particles and soften the rubber. As the softened rubber is transported through the extruder cavity, the rubber is exposed to ultrasonic energy.
The combination of heat, pressure, and mechanical mastication is sufficient to achieve varying degrees of devulcanization.

The microwave process applies thermal energy very quickly and uniformly on the waste rubber. However, any vulcanized rubber used in the microwave process must be sufficiently polar in structure so that the microwave energy can be absorbed at the appropriate rate to make devulcanization viable. The only reasonable use for microwave devulcanization is on compounds containing primarily a polar rubber, which limits its application.

1.2.8. Emerging applications

The industry aims constantly at identifying recycling techniques that will provide new and innovative solutions for recovering used tyres. As an illustration, the use of rubber granulate in concrete is being tested in France and Spain. Studies are also in progress to establish new composite materials that associate the granulates obtained from used tyres with thermoplastic matrices, compounds that can be used in the manufacture of spare car parts.

1.3. Description of Reprocessing, Recycling and recovery techniques

To produce granulates and powder from ELTs, the tyres have to undergo several steps of size reduction and separation of rubber and non-rubber elements that constitute a tyre (see also section 1.1.2).

Typically the following process steps are required as a minimum:

- Initial size reduction (shredding);
- Grinding;
- Removal of metal with magnets;
- Removal of textile by vacuum;
- Screening;
- Re-introduction in the grinder of material that does not meet the required size distribution.

The processes used for those purposes are described in this section.

1.3.1. Shredding

Before any rubber granulate or powder can be produced tyres need to be shredded into smaller pieces called "shreds". ELTs are fed into a mobile or fixed shredder to generate a coarse material approximately 300 -50 mm in size. Steel and textile are not typically removed, only a low percentage of steel is recovered at this step.

In some cases, a debeader can be used to remove the steel bead from truck tyres prior to shredding to reduce machine wear in order to prevent an excess of wear in the cuts.

The volume of tyre material is reduced by approximately a factor of 4 after shredding.

There are several processes that can be used to produce rubber granulate.

1.3.2. Ambient grinding

In ambient grinding, scrap rubber is reduced to a 0-25 mm chip at the first step of granulation. These chips enter a granulator that, at ambient temperatures, processes the chips into rubber granulates while removing the steel (via magnet) and fibre (via shaking screens and wind sifters). Depending on the desired product size, additional processing (secondary grinding) may be necessary to achieve smaller particle sizes.

1.3.3. Cryogenic grinding

Cryogenic grinding is an alternate technology used to produce rubber granulates similar to that produced by ambient grinding. In cryogenic grinding, vulcanized scrap rubber is first reduced to 50 mm chips by processing in a shredder. The chips are then frozen to cryogenic temperatures with liquid nitrogen in a freezing tunnel. The resulting rubber is brittle and glass-like, and therefore can be shattered into small pieces in a hammer mill. As with ambient processing, the metals and fibres are then removed from the particles.

Because of the nature of crushing/shattering, the resulting particle size distribution is wider than with ambient grinding, and small particle sizes are achievable without additional processing.

1.3.4. Water-jetting

Since it is difficult to cut steel treads and beads of big tyres (with a diameter > 1,400mm), specific technologies (mostly as industrial pilots) have been developed to cut through metal in a single pass without shredding or crushing it, using a jet of water at high velocity and pressure, or a mixture of water and an abrasive substance. As an outcome of the process, mainly steel wire and rubber powder/chips are obtained.

1.4. Industry structure

Different stakeholders are involved in ELT collection, sorting and reprocessing (shredding/granulation) before the rubber fraction of tyres can be delivered to final users. Due to a lack of aggregated data at EU level on the industry structure, estimates had to be made based on literature research and expert judgement.

Collection & sorting of ELTs: In EU27, it is estimated that more than 1,000 companies are involved in collecting and sorting ELTs. Those are essentially SMEs, often family-owned businesses.

Reprocessors (shredding installations): In EU27, it is estimated that 500 reprocessors are converting ELTs into shreds. Those are essentially SMEs, often family-owned businesses.

Major granulators: A comparative study was performed by Aliapur in 2009 on market outlets of rubber granulates from end-of-life tyres in Europe. The study covered 17 EU countries split in 5 geographical areas: Southern Europe (France, Italy, Spain, Portugal, Greece), UK & Ireland, Continental Europe (Germany, The Netherlands, Belgium, Switzerland), Eastern Europe (Poland, Hungary, Romania) and Northern Europe (Denmark, Norway & Sweden).

The study identified the number of major granulators in those 17 countries: 70 in Southern Europe (PT, FR, ES, IT), 11 in the UK and Ireland, Continental Europe (DE, BE, CH, NL): 16, Eastern Europe (HU, RO, PO): 11, Scandinavia (NO, DK, SE): 5.
Source: Aliapur study (Dec. 2009) – Comparative study on outlets of ELT granulates in Europe (Etude comparative des débouchés de granulats issus de PUNR en Europe))

Granulators were split in 4 categories according to production:
* Low: 2,000t – 7,000t/year: local granulators, rubber producers for a specific application (producing granulates for their own use)
* Average: 7,000t – 15,000t/year: major national granulators & global rubber producers (producing granulates for their own use)
* Important: 15,000t – 30,000t/year: major national granulators & global rubber producers (producing granulates for their own use)
* Very important: >30,000t/yr: major international companies

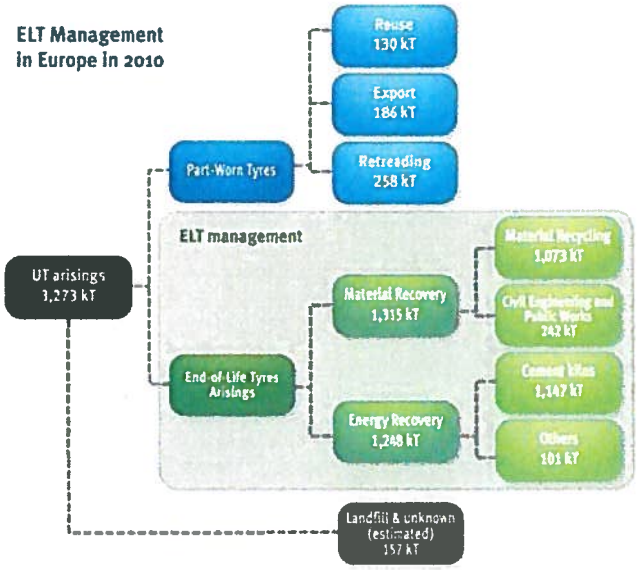
1.5. Economy and market

1.5.1. ELT Management in Europe

In 2010, used tyres arising in EU27 represented about 3.3 million tonnes. After sorting out the data of those tyres going for reuse (second-hand market) or retreading, an estimated 2.7 million tonnes of end-of-life tyres (ELTs) were left to be treated. This material flow went into a variety of recycling, public works and civil engineering applications or was used as a fuel substitute in cement kilns, boilers and power plants.

In numbers, this means that 1.3 million tonnes of ELTs went to material recovery, and 1.2 million tonnes in energy recovery. Within material recovery, the volume of ELTs sent to granulation in 2010 in Europe was estimated at about 1.1 million tonnes, the rest being used in civil engineering and public works applications.

As regards energy recovery, the main user of ELT shreds or whole tyres remains the cement industry (92% in volume).



Source: ETRMA ELT Report (2011 edition)

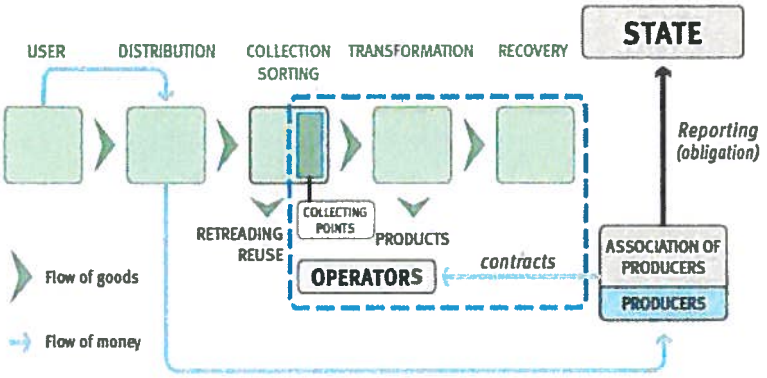
Today, within the EU, there are 3 different systems for managing end-of-life tyres:

- producer responsibility
- free market system
- tax system

Extended Producer responsibility

Under extended producer responsibility, the law defines the legal framework and assigns the responsibility to the producers (tyre manufacturers and importers) to organise the management chain of ELTs. This led to the setting-up of a not-for-profit company financed by tyre producers aiming at managing collection and recovery of end of life tyres through the most economical solutions. A reporting obligation towards the national authorities provides a good example of clear and reliable traceability. In addition, these companies are able to develop high-level knowledge on technologies and build up additional R&D capacities. The annual investment in R&D is around € 5 million. For the end user, this system guarantees transparency of costs through a visible contribution, clearly indicated on the invoices. This system represents about 56% of the UT arisings in EU27+NO+CH.

Producer responsibility scheme



This system appears to be the most suitable and robust for addressing and resolving end of life tyre arisings, in a sustainable manner for the long term, and to achieve a 100% recovery rate, in the most economical way. On the whole the tyre manufacturers have demonstrated a clear preference for this system and have deployed determination and commitment to take this route.

Free market system

Under this system, the legislation sets the objectives to be met but does not designate those responsible. In this way all the operators in the recovery chain contract under free market conditions and act in compliance with legislation. This may be backed up by voluntary cooperation between companies to promote best practices. This system represents about 42% of the UT arisings in EU27+NO+CH.

Tax system

Under the tax system each country is responsible for the recovery and recycling of the end of life tyres. It is financed by a tax levied on (tyre) production and subsequently passed on to the customer. This is an intermediate system whereby the producers pay a tax to the State, which is responsible overall for the organisation and remunerates the operators in the recovery chain. This system represents about 2% of the UT arisings in EU27+NO+CH.

1.5.2. Economic impact

In terms of economic impacts, the total cost related to ELT management in EU27 (including all recovery routes, hence not limited to the granulation route) was estimated at €550 million annually, split between:

- Collection and transport: €250 million
- Reprocessing: €200 million
- Recovery: €50 million
- R&D and overheads: €50 million

Source: ETRMA estimates (based on an ELT arising of 2.7 million tonnes for EU27)

ETRMA estimated that the turnover for the granulation sector only would be around 140 to 200 million € based on estimated processing costs paid to granulators, the sales of the materials, the yield of the granulation process and the quantity of ELTs sent to granulation in EU27).

595 **1.5.3. Trade of rubber scrap and granulates**
596 Based on data from Eurostat for "waste, scrap and parings of rubber and rubber granulate", it can be
597 concluded that the trade by the 27 Member States is growing steadily, both in volume and in value.
598
599 Hence, there is a significant international trade for the rubber fraction of tyres and a real market for
600 ELT-derived materials.
601
602 **Figure 1** : Trade volume by the 27 EU Member States. (Eurostat trade statistics – CN code 4004 0000
603 'Waste, parings and scrap of soft rubber and powders and granules obtained therefrom)
604
605

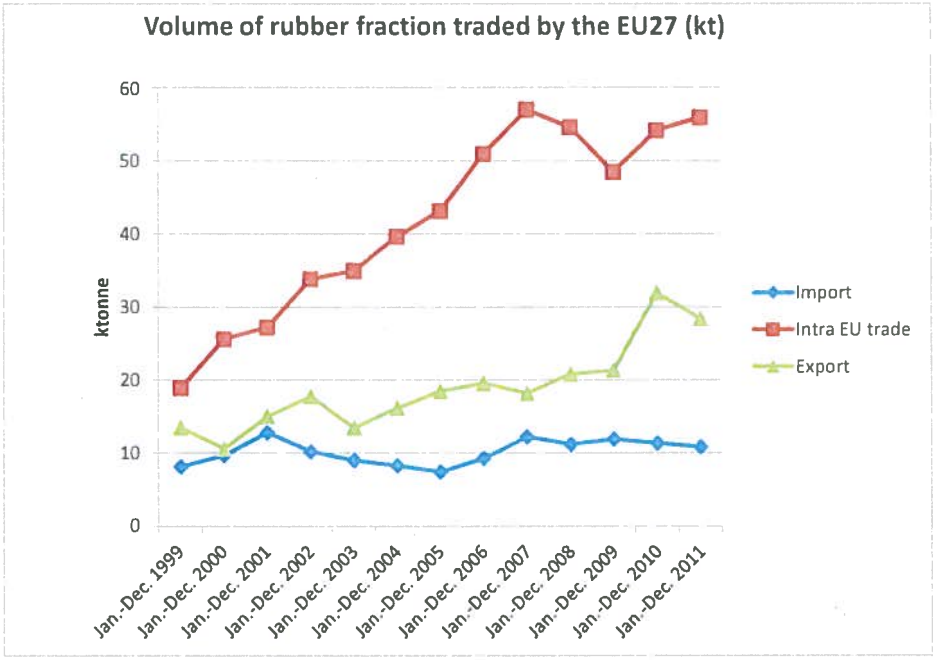


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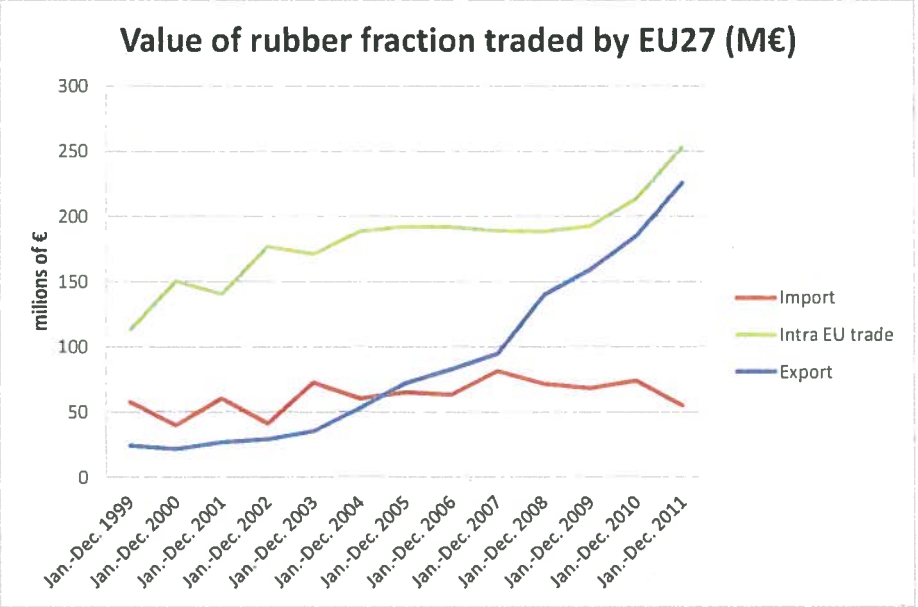
Figure 2 : Value of the trade by the 27 EU Member States. (Eurostat trade statistics)



1.5.4. Uses of rubber granulates and powder

There is no EU wide reliable figure about the uses of rubber granulates. Figures from 4 ELT management companies in 2010 (Aliapur – France / Recybem – The Netherlands / Signus – Spain & Valorpneu - Portugal) show an indication of the potential uses of ELT granulates based on 4 markets representing about 32% of the EU rubber granulates processed in EU27[4] ; synthetic turf being today the main market outlet of ELT granulates.

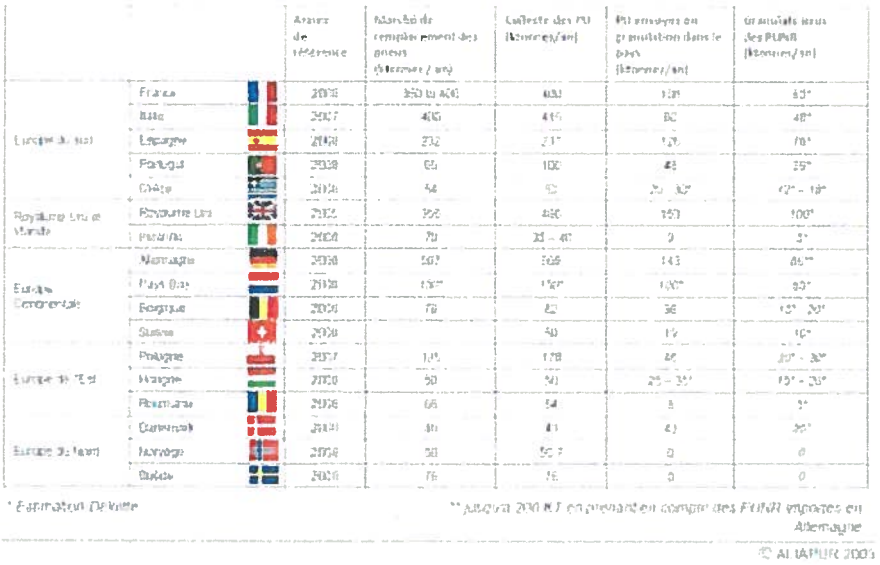
Applications of rubber Granulates (incl. powder)

	Aliapur tonnes	*Valorpneu* tonnes	*Signus* tonnes	*Recybem* tonnes	*Total* tonnes	*μ* %	*Aliapur* %	*Valorpneu* %	*Signus* %	*Recybem* %
Asphalt & road paving	3.993	3.216	4.800	2.708	14.717	7%	4%	11%	8%	10%
Concrete	0	0			0	0%				
Sport & children playgrounds	23.958	2.962	9.000		35.920	17%	24%	11%	15%	
Moulded objects	30.946	171	2.400		33.517	16%	31%	1%	4%	
Synthetic turf (incl. infill)	35.937	12.986	40.801	14.893	104.617	49%	36%	46%	68%	55%
Anti-vibration & insulation mats		1.382	24		1.406	1%		5%	0,04%	
Industrial floors (rubber tiles)		0		9.477	9.477	4%				35%
Equestrian floors		55			55	0,03%				
New compounds		0			0	0%				
Rubber reclaim		0			0	0%				
New compounds		0			0	0%				
Undetermined	4.992	7.251	2.976		15.219	7%	5%	26%	5%	
Total	99.826	28.023	60.001	27.078	214.928	100%	100%	100%	100%	100%

[4] Calculation based on 1,100,000 tonnes of ELTs sent to granulation in EU27 (2010 figure) * 62% (average percentage of rubber granulates obtained post-granulation within Aliapur, Recybem, Valorpneu & Signus) i.e. an estimated production of 682,000t of rubber granulates in 2010. The rest of the mass balance consisting of the steel fraction (μ19%), the textile fraction (μ17%) and some contamination (μ1%)

Source : Aliapur / Signus / Valorpneu / Recybem

As far as the country production volume of ELTs sent to granulation and rubber granulates is concerned, the 2009 Aliapur study provides some estimates for the 2007-2008 period.



			Année de référence	Marché de remplacement des pneus (kTonnes / an)	Collecte des PU (kTonnes/an)	PU envoyés en granulation dans le pays (kTonnes/an)	Granulats issus des PUMR (kTonnes/an)
	France		2008	350 to 400	400	130	60*
	Italie		2007	405	415	80	48*
Europe du sud	Espagne		2008	232	217	120	70*
	Portugal		2008	65	100	45	25*
	Grèce		2008	54	50	20 - 30	12* - 18*
Royaume Uni et Irlande	Royaume Uni		2007	350	450	150	100*
	Irlande		2008	70	35 - 40	0	0*
	Allemagne		2008	567	565	143	86**
Europe Centrale	Pays Bas		2008	130*	130*	100*	60*
	Belgique		2008	70	65	30	15* - 20*
	Suisse		2008		50	15	10*
	Pologne		2007	140	170	40	20* - 30*
Europe du Nord	Hongrie		2008	50	50	25 - 35*	15* - 20*
	Roumanie		2008	65	54	5	3*
	Danemark		2008	40	41	40	20*
Europe Scandinave	Norvège		2008	50	50 ?	0	0
	Suède		2008	75	75	0	0

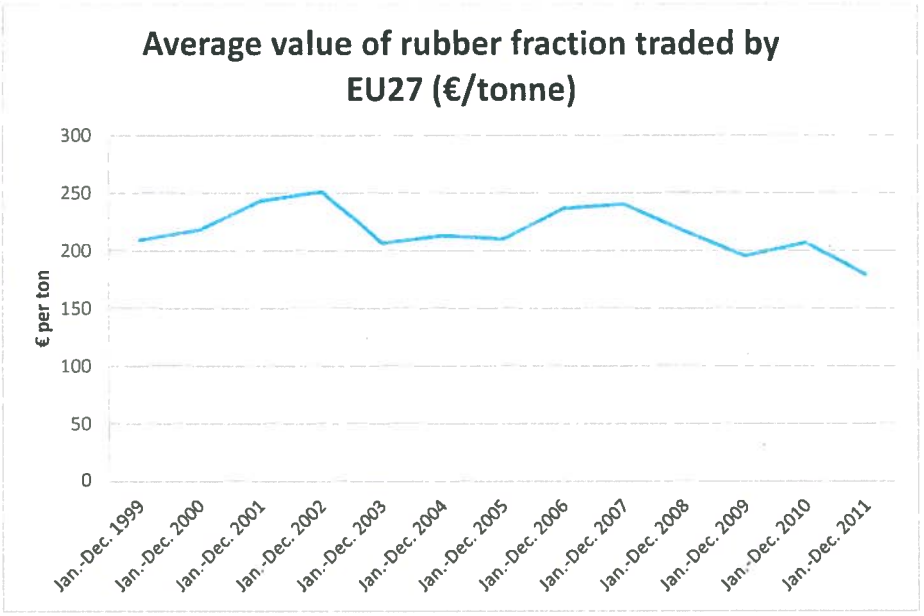
* Estimation Deloitte

** Jusqu'à 200 KT en prenant en compte des PUMR exportés en Allemagne

6 © ALIAPUR 2009

1.5.5. Economic data on ELT price evolution (rubber granulate & powder).

Based on the EU27 volume and value data from the Eurostats trade statistics, the development of the price per tonne for granulate and powder can be estimated. This may not represent the real market prices, which may fluctuate and may differ per application, but this gives an indication that over a period of more than 10 years the prices of the material that were traded internationally have been fluctuating between € 190 and € 250 per tonne.



Source: Based on Eurostat trade statistics – CN code 4004 0000 'Waste, parings and scrap of soft rubber and powders and granules obtained therefrom'

As regards ELT granulates, the average market price is currently more about 130€/tonne. A decreasing trend has been observed over the last 2 years due to the impact of the financial crisis and a phenomenon of destocking.

1.6. Specifications and standards

Specifications and standard classifications for ELT-derived products exist at all levels: International (ASTM), European, national as well as between individual parties.

Comment [elt1]: Should we add one Annex with the titles of the standards ?

Available ELT related standards (national/EU & ...)

	EU	FR	DE	UK	USA
Materials obtained from ELTs (CEN TC366)	CEN TS 14243	AFNOR XP T47-751 AFNOR XP T47-752 AFNOR XP T47-753 AFNOR XP T47-754 AFNOR XP T47-755 AFNOR XP T47-756 AFNOR XP T47-757 AFNOR XP T47-758 AFNOR XP T47-759 AFNOR XP T47-760 AFNOR XP T47-761-1 AFNOR XP T47-761-2 AFNOR XP T47-761-3 AFNOR XP T47-762-1 AFNOR XP T47-762-2 AFNOR XP T47-763-1 AFNOR XP T47-763-2 AFNOR XP T47-765		PAS 107 Q. P. applying PAS 107 PAS 108 Q. P. applying PAS 108	ASTM D5603-01 ASTM D5644-01
		on going stopped			

on-going
stopped

It is clear that for marketing and trading reasons, standards and specifications are needed not only to set the price but also to be used as reference for quality control.

1.6.1. ELT derived products

The European Committee for Standardization (CEN) has developed a technical specification CEN/TS 14243:2010 "Materials produced from end of life tyres - Specification of categories based on their dimension(s) and impurities and methods for determining their dimension(s) and impurities" defining specifications and test methods for tyre recycling and utilization of the tyre in the European market.

The main categories of products - at different stages of the treatment processes, primarily by size reduction - that are considered in the standard by size are cuts (>300 mm), shreds (20 mm – 400 mm), chips (10 mm – 50 mm), granulates (0.8 mm to 20 mm), powders (typically under 0,8 mm), steel and textiles. The standards are expected to create new markets for tyre derived products and ensure uniform quality.

Nevertheless, other properties might be characterized such as the free steel and textile content for granulates and powders or other impurities (see normative Annexes B, C & D of CEN TS 14243).

Additional properties might be relevant to characterize but are not yet framed in EN harmonized standards.

In this regard, CEN TC366 has adopted in march 2012 a Business Plan to convert CEN TS 14243 into an EN standard and further harmonize how to characterize ELT derived products.

Bilateral contract/Specification

Next to national, EU or international standards, there are also specifications made as agreements or contracts in trade between two parties. Such specifications are usually based on a standard classification with additional requirements suitable for the desired production process or product. In this case, the specifications are being continuously reviewed and if necessary modified.

1.6.2. Product standards relevant to applications of ELT granulates, powders and chips

Since the existence of standards reflects the existence of markets, a non-exhaustive list of product standards relevant to the main applications of ELT granulates, powders and chips has been listed below.

ELT granulate/powder / chips applications	EU	DE	USA
Children playgrounds (CEN TC136)	CEN EN 1177		
Asphalt Rubber			ASTM D6114-97
Sport Surfaces (CEN TC217)	CEN TS 16384 CEN EN 15330 CEN EN 14877 CEN EN 14904		
Moulded objects	CEN EN 12527 CEN EN 12527 CEN EN 840-5	 RAL GZ 951/1	

Bituminous mixtures/Asphalt modified bitumen

At international level, ASTM D6114-97 is the reference standard for asphalt-rubber binder.

Some European countries have drafted several documents establishing the technical specification for those binders and blends, for example the Spanish Technical Guideline on the use of Asphalt Rubber edited by the Spanish Public Works Ministry.
http://www.cedex.es/castellano/home/datos/Manual_NFU.pdf

1.7. Legislation and regulation

In the EU, the management of End-of-life tyres is currently under the waste regulations, e.g. the Waste Framework Directive and EU Waste Shipment Regulation. Obligations to divert ELTs from landfill arise from the EU Landfill Directive (Dir. 99/31/EC). Several Member States have implemented specific national legislation addressing the collection and recycling of ELTs, some requiring producers and importers to be responsible for these tasks. The systems in place in Member States may exclude certain tyre categories.

For further information, see Annex I: List of national MS regulations related to ELTs.

1.7.1. Waste Framework Directive

The collection and sorting plants of end-of life tyres are operated under a permit for waste treatment, although the details of their permits vary across member states. The subsequent treatment to produce granulate and powder include shredding and granulation which are also operated under a permit for waste treatment. In the cases that granulate or powder is still a waste, the subsequent steps for use of the granulate and powder in end-applications would also need to be performed under a waste treatment permit. Since the status of ELT granulate is currently not harmonized and in certain countries simply not clarified, the operating conditions and administrative requirements may differ considerably between the Member States. The impact on the operations that use granulate and powder is described in Chapter 3.

According to an ETRMA enquiry with ELT management companies, ELT-derived granulates are still considered as waste in the UK, in Sweden, in France and in the Netherlands (except for use as rubber infill, if Recybem-VACO recommendations are being followed, which gives a presumption of conformity with the duty of care principle of the Dutch Soil Protection Law – read http://www.agentschapnl.nl/faq/veelgestelde-vragen-over-bouwstoffen-instrooirubber-op-kunstgrasvelden) whilst for example in Spain, Portugal, Germany, Norway and Finland, they seem to

be considered as products. This shows a lack of harmonization of how the waste definition is applied across the EU as regards ELT-derived granulates and powder.

1.7.2. Waste Shipment Regulation

The EU Waste Shipment Regulation establishes the control procedures for transporting waste within, into and out of the EU. In the situation where granulates or powder are waste, the transboundary movements of those materials would have to follow the procedures of waste shipment Regulation (EC) N° 1013/2006. If they are destined for recycling or recovery they are falling under List B of Part I of Annex V (also referred to as the 'green list'), which are not covered by article 1.1.a of the Basel Convention, and therefore not covered by the export prohibition under the Convention.

Exports of waste under the 'green list' within the OECD countries is not subject to the notification and consent procedure and is done as normal commercial transactions; however, the Regulation does require the completion of an Annex VII form. There is also a transitional period for a number of EU member states in Central and Eastern Europe that require a notification for exports of (certain) wastes on 'green list'. These transitional periods will end in the period 2011 – 2016, depending on the country.

For exports of waste on the 'green list' to non-OECD countries, the EU Commission has requested those countries as to whether they will accept such waste and which procedure should apply in such cases. This may involve a procedure of written notification and consent prior to the shipment. This procedure is applied as default if the non-OECD country has not replied to the request of the EU Commission. Since only a limited number of countries accepted to follow the green list procedure, all exports of waste tyres to other non-OECD countries need to follow a procedure of notification and prior written consent, or an equivalent national procedure designated by the country of destination. [5]

The notification and prior written consent procedure generally involves administrative activities, payment of a fee and also the establishment of a financial guarantee[6].

In all cases, the Regulation only allows exports to countries outside of the EU if the facility that receives the waste is operated in accordance with standards for protection of human health and the environment that are broadly equivalent to such standards applicable in the EU.

If granulates and powder that fulfil the end-of-waste criteria are a product, the export to non-EU countries will not be under the waste shipment regulation unless the country of destination considers the ELT granulates/powder as being waste (in case of disagreement, the more stringent status is applied). The impact on shipments is described in Chapter 3.

1.7.3. IPPC Directive

The European Directive on Integrated Pollution Prevention and Control (2010/75/EC) regulates the requirements for permits and operational conditions of industrial installations. Collection and sorting plants would not be falling under the IPPC directive, neither would be tyre recycling plants. Only if part of such installations would be used for producing materials destined for energy recovery with a capacity of over 75 tonnes per day the installations would be covered by the IPPC directive and would require a permit under the conditions specified in this directive and would have to respect specific operational conditions and requirements for emissions.

1.7.4. REACH Regulation

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[5] See Commission Regulation (EC) No 1418/2007 of 29 November 2007 and http://ec.europa.eu/trade/wider-agenda/environment/shipment-of-non-hazardous-waste/questionnaire/

[6] A financial guarantee is not required in cases of shipment of 'green listed' waste to EU-member states which apply the notification procedure for this waste as a transitional measure.

Waste are exempt from the provision of the REACH Regulation. Recovered products that are not waste would however be covered by this Regulation. The implications of this are discussed in detail in Chapter 3.3.

1.7.5. The Construction Products Directive / Regulation

Waste are exempt from the provision of the Construction Products Directive. Recovered products that are not waste would however be covered by this Regulation. The implications of this are discussed in detail in Chapter 3.3.

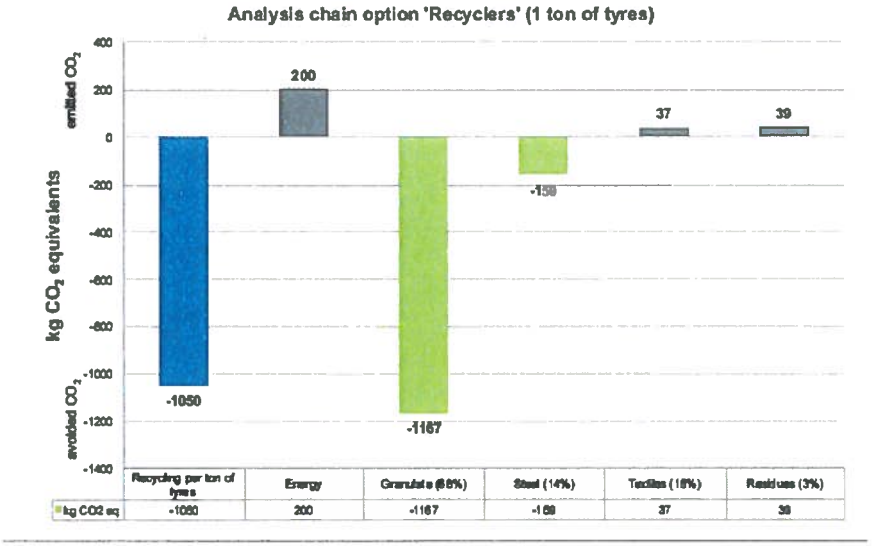
1.8. Environmental and health aspects

1.8.1. Environmental benefits related to the material recovery of ELT derived rubber fraction

Several LCAs on ELT recovery routes and applications have been performed over the last years and demonstrate that the use of ELT-derived rubber (as powder or granulate) as a substitute to other materials provide net environmental benefits, regardless of the environmental indicator considered.

Recybem/ARN Ecotest Product Carbon Footprint (2011)

A product carbon footprint exercise coupled with a Life Cycle Costing (LCC) approach has been performed in 2011 by Recybem/ARN, respectively the Dutch organisation responsible for the management of ELTs and the one responsible for ELVs. The results show that the use of rubber granulates saves far and away the highest percentage of greenhouse gas emissions since it saves on the production of primary synthetic rubber. The energy required for processing the tyres (shredding and granulating) has a limited effect on the results.



Aliapur LCA (2009)

Aliapur performed in 2009 a comparative environmental evaluation of 9 recovery alternatives for end-of-life tyres, of which moulded objects, synthetic turf, equestrian floors applications are relevant for our purpose (as using ELT-derived rubber granulate or powder to substitute other materials).

This evaluation was based on the Life Cycle Assessment approach and conformed to the methodological prescriptions developed in ISO 14040 and ISO 14044 standards. It was carried out by

PricewaterhouseCoopers Ecobilan in 2009, a consulting firm specialising in life cycle assessments, and was reviewed by a committee of European LCA experts and interested parties.

The LCA made it possible to identify that, under present conditions, notably the 3 above-mentioned recycling applications provided net environmental benefits, regardless of the environmental indicator considered.

Environmental review / Indicators	Synthetic turf	Moulded object	Cement works	Steelworks	Urban heating	Equestrian floor	Retention basin	Infiltration basin	Foundry	Asphalt / Rubber
Emissions of greenhouse gas of fossil origin (direct 100 years) (in kg eq CO_2)	-3 217	-2 703	1 466	-672	-1 275	-342	-458	-11	-1 193*	-1 585

Source: ALIAPUR 2013

Source: GENAN 2010

Genan LCA (2010)

Another LCA performed by Genan (2010) on the use of rubber powder in asphalt demonstrates also net environmental benefits for that application.

1.8.2. Environmental impacts generated by shredding & granulation

In the Aliapur LCA, a sensitivity analysis was performed on granulation processes used in France (compression granulation and successive shredding granulation) and cryogenic granulation. The results confirm that cryogenic granulation is more energy intensive than conventional granulation and has overall higher impacts.

Table 8 Comparison of the environmental generated impacts by different granulation techniques

Scenarios Indicators	Reference scenario	Cryogenics
Total primary energy consumption (in GJ)	3	9
Emissions of greenhouse gas of fossil origin (direct, 100 years) (in kgeq. CO_2)	39	369
Emissions of acidifying gas (in geq. SO_2)	243	2 031
Emissions of gas playing a role in the creation of tropospheric ozone (in geq. ethylene)	5.1	15.7
Consumption of non-renewable resources (in kgeq. Sb)	0.3	2.5
Water consumption (in m^3)	0.66	9.40
Waste playing a part in eutrophication (in geq. PO_4)	23	115
Production of waste (in t)	0.34	0.66

Source: Aliapur LCA, Int J Life Cycle Assess (2010) 15:883–892

Nevertheless, the impacts associated to the tyre collection, sorting and shredding/granulation stages were shown to be secondary to the benefits provided by the recovery. This is because of the substitution effect, with the ELT replacing high energy consumption materials, as well as the fact of certain impacts being avoided (the production and transport of certain materials replaced when the life span of the ELT products is greater than that of the products replaced), and the biomass content of the tyres (for the use of ELTs as a fuel substitute).

Risks related to transportation and storage. Potential risk of fire for rubber powder due to the heat generated by friction during the shredding process.

1.8.3. Health aspects related to granulation

A study was performed by INRS at French ELT granulation plants in 2011 to estimate levels of inhalation exposure to the particles produced during granulation and to determine the atmospheric pollutants in the workshops. Exposure measurements involved processes to turn used tyres into granulates in 4 facilities. Whatever the process used, the shredders were not individually confined and all the shredding lines were equipped with a magnetic separator for collecting the reinforcing metal parts and a textile fibre separation system using a cyclone, used as local exhaust ventilation (LEV). Thanks to the LEV, the dust emitted during shredding could be captured with fibre. In those facilities, few workers are assigned to installations of granulate production.

Particulate exposure levels were measured using filter samples and gravimetric analysis. In parallel, volatile organic compounds (VOCs) screening was carried out using samples taken on activated carbon supports, followed by an analysis using a gas chromatograph coupled to a spectrometric detector. In contrast to the data in the literature, VOC levels >1 ppm were not detected. Due to possible clogging of the textile fibre separation systems, optimizing exhaust ventilation systems inside the shredders, with a cyclone for example, is essential for reducing the exposure of workers.

1.8.4. Environmental aspects related to uses of rubber powder and granulates in final applications

Ecotoxicity and leaching studies

Acute / short-term toxicity

In 1995 and 1996, ISO standard acute toxicity tests were performed at the request of BLIC (now ETRMA) on powdered rubber from tyre tread at the Pasteur Institute. The species considered included algae (ISO 8692), shellfish (ISO 6341), fish (ISO 7346-1) and earthworm (ISO 11268/1). Aquatic toxicity was not observed with the LC50[7] or EC50[8] greater than 13,000 mg/l as compared to the threshold for classification of harmful aquatic organisms of 100 mg/l. Toxicity was not observed in the earthworm test.

In 2003, tests conducted by Birkholz in California using rubber granulates taken from a site were the tyre had been disposed showed toxicity to: bacteria, invertebrates, fish and green algae. After three months, new samples were tested, demonstrating a 59% reduction in the toxicity detected in previous tests. The authors concluded that while undiluted leachate from fresh tyre rubber may pose a moderate threat to aquatic toxicity, environmental aging will attenuate this toxicity such that the risk is not appreciable.

A literature study published by ETRMA on the leaching of substances from whole and shredded used tyres in June 2005 also concluded that the impact of the application of used tyres in subsoil of roads or surface waters under neutral (common) environmental conditions, has negligible effects of the on ground- and surface water quality and the aquatic environment.

Long term studies

In addition to the acute or short-term toxicity addressed above, long-term studies have also been performed in order to investigate potential issues related to PAHs and zinc.

Long-term investigations point to the fact that certain types of tyres (e.g. high aromatic oil-containing tyres[9]), under certain conditions may leach significant amounts of PAH into the aquatic environment.

Recent research studies carried out in different European countries and in the US on potential environmental and health risks of the use of rubber infill from recycled car tyres on artificial turf are listed below and their main conclusions are summarized.

Switzerland

Between 2005 and 2007, the Swiss Federal Authority of Sports (BASPO) performed field tests of simulated artificial turf surfaces using lysimeters originally designed for agricultural research (Müller 2008). The purpose of the testing was to study the substances that leach from synthetic sports surfaces under natural rainwater conditions over a period of one year.

Of four artificial turf surfaces considered, one consisted of truck tyre infill with quartz sand underlay, two contained EPDM infill and one did not contain infill material. The monitored parameters included total DOC, total dissolved organic nitrogen, inorganic nitrogen compounds, aniline, alkylate phenylenediamines, benzothiazole, PAHs, and zinc.

The results of the tests indicated that zinc and PAH concentrations were not elevated when compared to the blank sample containing only gravel. These results are attributable to zinc

[7] LC50 (Lethal Concentration 50). The concentration of a chemical in water that kills 50% of the test animals in a given time (usually four hours)

[8] The term half maximal effective concentration (EC50) refers to the concentration of a drug, antibody or toxicant which induces a response halfway between the baseline and maximum after some specified exposure time. The EC50 of a graded dose response curve therefore represents the concentration of a compound where 50% of its maximal effect is observed.

[9] Restrictions on the marketing and use of high aromatic oils (also called PAH-rich oils) for the production of tyres placed on the EU market is forbidden since 1 January 2010 (see REACH regulation 1907/2006 Annex XVII, entry 50)

retention by absorption in the underlayment layer and low amounts of leachable PAHs in the rubber compounds. Aromatic amine and benzothiazole compounds were initially detected in the range of 10 to 300 ppb, but typically rapidly decreased to below the detection limit by the end of the testing period. The conclusion of the study was that organic substances similar to that observed in roadway runoff are leached off by rainwater over a relatively short time period, but that state of the art synthetic sports surfaces are unlikely to have adverse surface water or groundwater effects.

France

The study[10] researched and evaluated possible environmental effects linked to the transfer of meteoric water into the natural environment as a result of its percolation through the components of the sports surface.

Two analytical approaches were followed:

1) chemical analysis for the determination of the concentration of potentially polluting elements and substances present in the percolates, 2) measurement of ecotoxicity of the percolates.

The Netherlands

As regards the environmental risk assessment part of the study, the initial investigation[11] consisted of a literature research supplemented with experimental research to fill the gaps in the knowledge (PAHs and Zinc) and to verify already available data. For the literature research, 17 research reports and 13 supplementary sources were investigated. In addition to that, use was made of Dutch and European legislation and guidelines. The literature research was complemented later on by several field studies.

Based on the screened literature, it was concluded that the emission of hazardous substances into air does not pose an environmental risk. This conclusion is supported by analyses of the composition of rubber infill, where only very limited amounts of volatile components are found. Therefore, later studies focused on the assessment of potential environmental risks in soil and groundwater related to the leaching of zinc, based on additional field tests.

Further to the 2007 measurements of zinc concentrations in drainage water and rainwater of 5 synthetic turf fields with drainage underlays of sand and lava[12], a first complementary field study "Zinc in Drainage Water under Artificial Turf Fields with SBR, 2008 measurements"[13] was performed on synthetic turf fields of 6-7 years old (compared to 1 & 3 years in the 2007 study). The results showed that the leaching of zinc from rubber did not lead to an increase of the zinc concentration in the drainage water of those fields. Later on, measurements were repeated on the same fields in order to see the evolution over the years.

The latest 2011[14] monitoring results show that the concentrations of zinc are low, both in the drainage water and rainwater. There is no systematic difference in the concentration of zinc in rainwater and the concentration of zinc in the drainage water. The average concentration of dissolved zinc in the drainage water from the five fields is 0.020 mg/l using a correction factor of 0.7 for the values of the detection limit. In relation to 2010, the concentration of zinc in the drainage water shows a slight increase. This is due to a number of high measurement values which influence the average concentration.

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[10] ALIAPUR et al (2007), "Evaluation environnementale et sanitaire de l'utilisation de granulats d'élastomères (vierges et issus de pneumatiques usagés) comme remplissage des gazons synthétiques de troisième génération." http://www.aliapur.fr/media/files/RetD_new/Etude_gazon_copy.pdf

[11] INTRON (2007)

[12] INTRON report A833860/R2006031, "Environmental and health aspects of rubber infill", (2007), and INTRON report A924220/R20070368, "Follow-up study on Environmental and health aspects of rubber infill – weathering and field tests", (2008)

[13] INTRON report A844740/R20090015, "Zinc in Drainage Water under Artificial Turf Fields with SBR, 2008 measurements (2009)

[14] SGS INTRON Report A862170/R20120010 "Monitoring of drainage water of artificial turf fields"(2012)

On the basis of the new observations, INTRON concludes that, after 9-10 years of use, there is no breakthrough of zinc in the underlays. Furthermore, it can be concluded that the zinc concentration in the drainage water is not significantly higher than that of zinc concentrations in the rainwater. Risks of using rubber infill, by leaching of zinc, are also not demonstrated after 10 years.

This is consistent with the laboratory tests performed in a previous study [15] in which it was calculated that, for a reference artificial turf system with 10 cm of lava and 30 cm of drainage sand, zinc leaching will not occur until a period of 230 to 1,800 years has elapsed, depending on the layer structure and acidity (pH 6.5 to pH 7.5).

As far as the reusability of the underlays is concerned, the added concentration of zinc in the sand remains below the background value for zinc stated in the Dutch Decree on Soil Quality ("Besluit bodemkwaliteit") ([Zn] = 59 mg/kg for < 2% lutum and < 2% organic matter) for at least 30 years.

This means that, after 30 years of use as an underlay beneath an artificial turf field, the sand is freely usable for all function classes, on condition that the background concentration of zinc in the sand is low enough when the artificial turf field is laid.

In a system with 10 cm of lava and 30 cm of sand, there is zinc adsorption in the lava top layer. In this case, for the first 100 years, the added zinc concentration in the sand layer remains well below the background value.

The reusability of the lava layer must be established by testing against the leaching limit value of zinc for building materials ELS10= 4.5 mg/kg DM. This value can be reached in the lava layer after 30 years. In practice, after 30 years the usability of the lava layer must be assessed by means of a leaching test.

Conclusions of the INTRON studies : during the technical lifetime of the synthetic turf field, there is no risk to the environment due to the leaching of zinc.

USA

The US Rubber Manufacturing Association (RMA) asked ChemRisk to conduct a "Review of the Human Health & Ecological Safety of Exposure to Recycled Tire Rubber found at Playgrounds and Synthetic Turf Fields" (July 2008). The study concludes that "No adverse human health or ecological health effects are likely to result from these beneficial reuses of tire materials".

Environmental conclusions

Physicochemical results of the percolates show for potentially polluting substances a kinetic independent from the type of granulates used both in-situ and in-lab tests. Analytically detectable trace substances/compounds are dissolved from the surface and from the polymer matrix of the granules in **a concentration which falls over time**[16]

The concentrations of the measured individual substances, the Dissolved Organic Carbon and the organic nitrogen decrease very rapidly initially, subsequently slowing down to a minimum in a time-dependent, substance-specific manner both in the lysimeter trials and the elute tests. Towards the end of the trial period, after a year, values have already **fallen below the limit of determination** for most of the individual substances. [17]

The **very low PAH concentrations** from the granulates were found at an identical level in the blank sample (gravel layer without surface); they correspond to ambient (ubiquitous) contamination levels. [18]

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[15] INTRON report A845090/R20090029, "Adsorption of zinc to synthetic turf underlays", (2009)
[16] ALIAPUR et al. (2007)
[17] MULLER, E. (2007)
[18] *Ibid* MULLER, E. (2007)

Leaching of heavy metals and organic chemicals such as Phthalates and PAH's, from recycled car tyres as infill in artificial turf systems stays well within the Dutch limit values for soil and surface water quality. Leaching of zinc is an exception but, after 9-10 years of use, there is no breakthrough of zinc in the underlays. Furthermore, it can be concluded that the zinc concentration in the drainage water is not significantly higher than that of zinc concentrations in the rainwater. **Risks of using rubber infill, by leaching of zinc, are also not demonstrated after 10 years.**[19]

According to the French research, after a year's experimentation, the results on the 42 physicochemical parameters identified and on the ecotoxicological tests show that water passing through artificial turf using as filling either virgin elastomers granulated or granulates from used tyres **is not likely to affect water resources in the short and medium term**.[20]

[19] SGS INTRON (2012)
[20] ALIAPUR, et al. (2007)

2. End-of-waste criteria of the rubber fraction of tyres

2.1 Rationale for end-of-waste criteria

The end-of-waste criteria should be such that the material has waste status if and only if regulatory controls under waste legislation are needed to protect the environment and human health; otherwise the material should have end-of-waste status to facilitate recycling and recovery. The criteria should be developed in compliance with the legal conditions, should be operational, should not create new disproportionate burdens and should reflect that recycling of the rubber fraction of tyres is a well-functioning industrial practice today.

The main types of benefits that can be expected when EU-wide end-of-waste criteria for the rubber fraction of tyres are introduced are given below:

- Improved functioning of the internal market as simplified and harmonized rules are applied across countries.
- Reduction of administrative burdens, especially related to shipment and transport.
- Preservation of natural resources / raw materials.

2.2 Conditions for end-of-waste criteria

According to the Waste Framework Directive, Article 6, 'certain specified waste shall cease to be waste within the meaning of point (1) of Article 3 when it has undergone a recovery operation and complies with specific criteria to be developed in accordance with the following conditions:

a) *The substance or object is commonly used for a specific purpose;*
b) *A market or demand exists for such a substance or object;*
c) *The substance or object fulfils the technical requirements for the specific purpose referred to in (a) and meets the existing legislation and standards applicable to products; and*
d) *The use of the substance or object will not lead to overall adverse environmental or human health impacts.*'

Regarding the first two conditions, it is evident in the case of the rubber fraction that a structured market exists. There are agreed specifications of the material between producers and customers. The rubber fraction is commonly used in a wide variety of applications such as synthetic turf, industrial floors, children's playgrounds, additive to asphalt and concrete and other applications. Any other use as for recycling purposes is highly unlikely, due to the consistent positive price of the rubber fraction of tyres that are used in recycling applications. This price is such that no economic operator would choose to send the material to an energy recovery or landfilling operation. This is also true in the case of exports outside the EU, including to non-OECD countries.

The third condition implies that end-of-waste criteria need to ensure that, at the point of ceasing to be waste, any technical requirement related to the use are fulfilled and the recycled material should comply with applicable legislation and standards as product. In the case of the rubber fraction of tyres, this means that at the moment of end-of-waste, the material should fulfil specifications required by the producers of the products that use the material. For the use of granulate in building applications, this also implies that the conditions for use, in particular with the view of protecting the aquatic environment from leaching of zinc are made known to the user.

The fourth condition implies that the use of the granulate, powder or chip will not lead to overall adverse environmental or human health impacts. From a life cycle point of view, recycling of the rubber fraction of tyres as such has overall environmental benefits, as shown in Chapter 1.8. The emissions of the use of the material in the different applications are the same, regardless whether the

material is a waste or not. Also outside the EU, process emissions or leaching does not depend on the waste status of the material but only on the conditions under which the material is being applied.

The main areas where the waste status of the rubber fraction of tyres can potentially make a difference for the environmental and health impacts are:

- Transport and trade (waste shipments)
- Application as construction material
- Preservation of natural resources /raw materials

If the material has the end-of-waste status it can in principle be transported by any transport undertaking and not only by those that are permitted to transport waste. Application of this material as construction material is extremely complicated when the material would still be considered as waste, as the construction site would in that case need to fulfill the requirements of a waste treatment installation, which could imply that most construction firms would refrain from using the material.

2.3 Outline of end-of-waste criteria

According to the JRC methodology guidelines, the ultimate aim of end-of-waste criteria is product quality and end-of-waste criteria will therefore usually include direct product quality requirements. In addition, a set of end-of-waste criteria may include elements that check product quality indirectly, in particular requirements on input materials and requirements on processes and techniques. Usually, there will also be supportive requirements on quality assurance and regarding the provision of information (e.g. on product properties and safe use).

The set of criteria as proposed in this outline follows the lines of the PAS 107 and its quality protocol that was developed in the United Kingdom and contains the end-of-waste criteria as applied there. However, the scope of the PAS is larger than the application of the rubber fraction of tyres, as it also contains elements for the use of shreds and cuts in applications for energy recovery. Even though the industry would also want to develop end-of-waste criteria for other fractions from end-of-life tyres and for other applications than recycling applications, the outline presented in the present document is limited to applications of the rubber fraction only.

End-of-waste criteria for ELT shreds used as a fuel substitute will be pursued in the context of the development of EU harmonized criteria for waste derived fuels. Only if such a general approach would fail it might be envisaged to develop such criteria for the specific tyre derived fuels. It might also be necessary to develop end-of-waste criteria for tyre-derived aggregates used in civil engineering and public works depending on the outcome of the JRC study on aggregates.

2.4 Criteria on product quality

Product quality criteria are needed to check for direct environmental and health risks and if the product is suitable as direct input to final use (divers applications as mentioned above). They also allow for deciding if the rubber fraction of tyres is sufficiently pure and has been separated effectively from other types of material.

Limit on metal content and textile content

Metal and textile are normal constituents of all tyres and are not present in used or end-of-life tyres as a contamination or mixing of different waste types. They have to be separated from the rubber fraction in order to allow specific applications of the rubber fraction. The end-of-waste criteria should include a limit value on free metal and free textile in order to check if the material is sufficiently pure to be used in the applications for which it is destined.

A limit value on free metal and free textile can be used in compliance testing by the producer of the material as well as in on the spot checks for example by regulatory authorities.

These limits determine when the end of waste candidates cease to be waste. Stricter requirements in specifications, standards and commercial agreements for specific applications will be possible if needed.

Draft formulation of the requirement
The free metal content of rubber materials should not exceed 0,1% by weight and the free textile content of rubber materials should not exceed 0,5% by weight or other limits as agreed between producer and user.

Moisture content and cleanliness

As regard the moisture content, there could be an agreement between supplier and customer about the moisture content depending on the application but this is irrelevant for the waste/product status.

The presence of debris, foreign material or contaminants may hamper the application of the rubber fraction in its application. The level of cleanliness required depends on the specific application and should be determined between producer and user. The degree of cleanliness does not have an impact on the level of risk associated with the material in relation to health and the environment.
Under certain circumstances tyres may be contaminated with hazardous substances e.g. with oil. Also tyres that have been partially attacked by fire may have a chemical composition that influences the product quality of the rubber fraction. Since these tyres would be excluded as input material for the processes (see section 2.5), it is not deemed necessary to add specific requirements on hazardous contaminants to the product quality requirements apart from a general requirement on cleanliness.

Draft formulation of the requirement
The cleanliness (absence of debris) should be agreed between producer and user.

Size range

The size of the rubber fraction determines the suitability for specific applications. This report only addresses materials that meet strict requirements regarding metal and textile content. Therefore a maximum average dimension of the rubber fraction applicable for those materials is being set in this report.

Draft formulation of the requirement
The maximum average dimension of the rubber fraction for different material categories should be 25mm.

2.5 Criteria on input materials

The purpose of criteria on input materials is to check product quality indirectly. The end-of-waste criteria should allow as input only waste types for which it is practical to obtain a rubber fraction in compliance with the product quality requirements. This implies that a waste cannot be allowed if it contains uncured rubber or rubber from other applications than tyres. These materials will influence the properties of the rubber fraction as well as the possible leaching behaviour.

Tyres that are contaminated with excessive debris/earth or other non-tyre related materials should be excluded or adequately cleaned. Tyres that are contaminated with excessive oil or that have been partially attacked by fire should be excluded as input material as they would hamper the recycling process.

Tyres which have been contaminated further to their previous use should be excluded or adequately cleaned.

Draft formulation of requirements:

No other waste shall have been used as input to obtain the rubber fraction of tyres than end-of-life tyres, waste rubber from the retreading of used tyres and waste rubber from the production of tyres, with the exclusion of uncured rubber.

Tyres that are contaminated with excessive oil, that have been partially attacked by fire should be excluded as input material.

Tyres that, due to their previous use, are contaminated with excessive debris/earth or other non-tyre related materials, should also be excluded as input material unless being adequately cleaned.

2.6 Criteria on treatment processes and techniques

The purpose of criteria on treatment processes and techniques is to check product quality indirectly. When reaching end-of-waste status, the material must have gone through all necessary treatment processes that make it suitable as direct input material for the final users of the rubber fraction and allow for transporting, handling, trading and using the material without increased environmental and health impact or risks.

The required treatment processes to achieve this differ depending on the particle size distribution that is required. Typically the following process steps are required as a minimum:

- Initial size reduction (shredding);
- Grinding;
- Removal of metal with magnets;
- Removal of textile by air separation;
- Screening;
- Re-introduction in the grinder of material that does not meet the required size distribution.

Draft formulation of requirements:

All mechanical treatment (like shredding, grinding removal of metal and textile, screening) needed to prepare the material for direct input into final use shall have been completed.

2.7 Quality assurance

Quality assurance is needed to create confidence in the end-of-waste criteria. The producer of the material applying the end-of-waste status will have to rely on a quality assurance system to be able to demonstrate compliance with all end-of-waste criteria for the material to cease to be waste.

A quality management system must be in place and cover the key areas of operation where compliance with end-of-waste criteria will have to be demonstrated. Whilst the implementation of an internationally recognized quality management system, such as ISO 9001 would be suitable, it is not considered appropriate for end-of-waste criteria to specify a particular quality management system which must be implemented.

It is considered appropriate and proportional for end-of-waste criteria to require that a quality management system be implemented and externally verified. Such verification should assess if the quality management system is suitable for the purpose of demonstrating compliance with the end-of-waste criteria applicable to the case in question.

A suitable quality management system for the rubber fraction of tyres is expected to include:

- Procedures to decide about the acceptance of input materials;

- Monitoring of processes to ensure they are effective at all times;
- Procedures for monitoring product quality (including sampling and analysis) that are adjusted to the process and product specifics according to good practice;
- Actively soliciting feedback from customers in order to confirm compliance with product documentation;
- Record keeping of main quality control parameters;
- Measures for the review and improvement of the quality management system;
- Training of staff.

The competent waste authority must be able to commission an independent verification of the implemented quality management system to satisfy itself that the system is suitable for the purpose of demonstrating compliance with end-of-waste criteria. The details on the verification, auditing or inspection of the quality assurance system can follow different national approaches.

Draft formulation of requirements:

The quality management system must at least include the following elements:

1. **The quality management system must be auditable and ready for inspection by the competent authority under waste law to ensure that the system is suitable for the purpose of demonstrating compliance with end-of-waste criteria;**
2. **Must include a set of documented procedures addressing each key process relevant to compliance with the technical end-of-waste criteria, including:**
    a. **Procedures to decide about the acceptance of input materials;**
    b. **Monitoring of processes to ensure they are effective at all times;**
    c. **Procedures for monitoring product quality (including sampling and analysis) that are adjusted to the process and product specifics according to good practice;**
    d. **Actively soliciting feedback from customers in order to confirm compliance with product documentation;**
    e. **Record keeping of main quality control parameters;**
    f. **Measures for the review and improvement of the quality management system;**
    g. **Training of staff.**

Specific requirements regarding Point 2.c (monitoring product quality)
It must be assured that each consignment shall at least be inspected visually regarding the product quality requirements.

By means of representative sampling of consignments the monitoring shall also include:
Testing of compliance with:

- **Levels of free metal and textile**
- **Max. Particle size**

The appropriate frequencies of sampling shall be established by consideration of the following factors:

- **The expected pattern of variability (for example as shown by historical results)**
- **The inherent risk of variability in raw material input quality and any subsequent processing;**
- **The inherent precision of the monitoring method; and**
- **The proximity of actual results to the limit of compliance with the relevant end-of-waste conditions.**

The process of determining monitoring frequencies should be documented as part of the overall quality assurance scheme and as such be available for auditing.

2.8 Information provided with the product

The producer of the material that invokes the end-of-waste status must provide information about the product to characterize the product technically, identify the external verifier of the quality assurance system and certify that all end-of-waste criteria have been met and accepted by buyers and competent authorities. Such information may be provided electronically.

Draft formulation of requirements:

Each consignment of the rubber fraction from tyres or multiple loads to the same customer shall either be accompanied by the following information or be available in electronic form to the customer and upon the request of any competent authority:

a) **The name or code of the material according to a specific product standard or specification and a declaration of compliance with the standard or specification;**
b) **Identification of the external verifier or the certification of the quality assurance system;**
c) **Statement of conformity to the end-of-waste criteria**

2.9 Point of ceasing to be waste

The moment at which the EoW status is acquired is after quality control of granulates, powder and chips at the granulation plant. The stock of granulates, powder and chips is then considered under the product regime.

3. Impacts

In order to evaluate the soundness of end-of-waste criteria, it is necessary to assess the possible impacts of removing the waste status from the candidate materials.
The impact assessment covers environmental, economic and legal impacts that may result once the waste candidate ceases to be waste. Many member states have different operational rules and permits used for waste handling. As a result, since there are different existing approaches, the impact of end-of-waste would be different from country to country.

3.1 Environmental and health impacts

It is very difficult to quantify the effect of removing the waste status on the potential increase of the quantities recycled. Nevertheless, the calculated environmental balances for the considered indicators[21] show that the management of ELTs leads to a significant environmental benefit.[22]

Environmental impacts during the sorting of UTs and posterior shredding and granulation are unlikely to be changed by introducing the end-of-waste criteria. The same applies to the impacts related to the use of the rubber fraction of tyres.

[21] Total primary energy consumption, Emissions of greenhouse gas of fossil origin (direct, 100 years) , Emissions of acidifying gas, Emissions of gas playing a role in the creation of tropospheric ozone, Consumption of non-renewable resources, Water consumption, Waste contributing to Eutrophication, Production of waste (Source : Aliapur LCA, Int J Life Cycle Assess (2010) 15:883–892)

[22] The Aliapur study shows significant environmental benefits for the use of ELTs in moulded objects and synthetic turf as well as for substituting fuels.

Is it unlikely that facilitated export of end-of-waste granulates outside the EU would have any substantial negative effects on environmental impacts for the users of those granulates outside the EU. To the contrary, it might be expected that there is a positive impact due to the product quality criteria imposed and the further professionalization of the sector by introducing auditable QMS.

The risk of polluting the environment in non EU countries through e.g. leaching from synthetic turf are similar inside and outside the EU as the leaching behaviour is not dependent on the area where the material is applied. The issue of potential leaching of zinc to the aquatic environment needs to be addressed independently of the question if the material is a waste or not.

It should also be noted that a change in the legal regime to be applied in the EU will not automatically change the legal regime in the receiving countries outside the EU. If the receiving country would consider material to be waste, it would continue applying the control regime for waste shipments. The exporters in the EU would need to respect that. If the material currently is not considered to be waste, the change of legal status in the EU would also not affect the way these countries would apply their regulations for this material. Therefore the application of the end-of-waste criteria would not increase the risk of polluting the environment in non EU countries.

3.1.1. Risks related to transportation and storage of granulates, powder and chips

Storage and transport of end-of-waste materials will no longer be covered by waste regulatory controls. Theoretically this could imply an increased risk for the environment if the end-of-waste candidate has properties that need such controls and if waste regulation is effective in providing it.

It can be expected that the End of Waste candidate as a product will be stored under the same conditions as it used to be as waste. The issues to be taken into account are:

- Fire protection;
- Impermeable surfaces to prevent soil contamination with leached substances

All these aspects apply similarly to the material, regardless if it is regarded to be a product or a waste.

3.2 Economic impacts

Tyre collection and recovery still costs about €600 million annually, an extra cost which is mostly paid by consumers. The industry is mature enough to turn worn-out tyres into a true resource thereby cancelling those costs for the benefit of consumers and contributing to the EU resource efficiency roadmap. There is a potential of additional annual value of at least 1 bn. € over the next decade but a major obstacle is the persisting qualification of the derived products of worn-out tyres as waste under the EU Waste Directive 2008/98/EC.

The economic and market impacts are expected mainly due to the:

- avoidance of costs related to the shipment of waste;
- benefits of harmonisation of waste status for end-of-waste criteria;
- avoidance of costs of handling granulates/powder/chips in terms of permits and licenses;
- avoidance of licenses related to the use of waste in applications, when applicable
- REACH compliance (see separate section 3.3).

3.2.1. Shipment

The waste status of the rubber fraction affects the exportability by increasing the administrative and economic burdens. The costs to the recycling sector in the wider sense are higher under the waste regime.

- Requirement to obtain certain information from overseas (non-EU) re-processors to satisfy 'broad equivalence' obligations set out in the Waste Shipments Regulation.

With 'end-of-waste' status, it would be possible to produce the necessary evidence based on the

end-of-waste criteria concept, rather than having to track the material through the docks and across the world, which will reduce administrative and translation (of supporting documents/licenses) costs.

- Notification and insurance costs on financial guarantees for waste shipments sent to countries where pre-notification is required (including certain 'green list' shipments) under the Waste Shipments Regulations.

The shipment of green listed waste to EU Member States with transitional period does not require a financial guarantee (insurance). However, administrative fees for notification might be high and vary from country to country. End-of-waste would facilitate the free trade of the End of Waste candidate that meets the set end-of-waste conditions and criteria when exported in Poland up to 31 December 2012, Bulgaria up to 31 December 2014 and Romania up to 31 December 2015.

- Administration costs for maintaining Annex VII Waste Shipments Regulation tracking forms and domestic waste movement forms.

In addition to the direct administration costs associated with form filling, there is an issue of having to supply commercially sensitive data. Customers outside the EU jurisdiction unwilling to have their commercial transactions recorded and made available to public authorities turn to non-EU suppliers. However, it should be noted that countries may have specific import procedures for the material. The decision to apply end-of-waste criteria to the material does not automatically change the legal status in the receiving countries. Therefore the receiving country may decide to continue applying its domestic procedures for import of the materials, e.g. the CCIC (China Certification and Inspection Group) procedure for China.

- Loss of business where customers fail to provide appropriate information. Notification control costs

The Waste Shipment Regulations require that non-OECD countries reply to the Commission's 'note verbale', indicating which 'waste' they are prepared to accept and what control procedures they wish to apply. If they do not reply (and very many do not – or give a negative reply for waste from the EU, whilst they import that material from elsewhere but do not consider such material to be 'waste'), then *notification controls apply by default*. In these circumstances, either the business incurs the additional costs of notification, or since notification documentation from the receiving country is difficult and time-consuming to obtain, in the meantime the buyer may turn to a non-EU supplier. On average the notification procedure takes 3 to 6 months. Where notifications are not required, the current 'waste' status may still affect exportability in terms of the waiting time for buyers to receive import licenses. As price and demand change quickly, these waiting times lead to market distortions and inefficiency. As regards the rubber fraction of ELTs, most countries that have replied the EU Commission asked for notification or prohibited the shipment of waste parings and rubber scraps (B3040).[23]

A number of Member States allow waste to cross only at designated border crossings which restricts transport routes. One of the examples concerns exports of granulates from the North of Italy to Germany. As Austria currently applies waste controls to this material a transport though Austria needs to comply with the requirements of the EU Shipments Regulation, although neither Italy nor Germany require this.

The Italian exporter has two options:

- either he applies the more expensive requirements for transport under the EU Regulation and uses the most direct transport route via Austria
- or he avoids this by organizing the transport by circumventing Austria, which would imply a longer transport distance. Harmonization of the EU provisions on the end-of-waste criteria would allow these

[23] See http://ec.europa.eu/trade/wider-agenda/environment/shipment-of-non-hazardous-waste/questionnaire/ and COMMISSION REGULATION (EC) No 1418/2007 of 29 November 2007. The replies to the questionnaire 2012 will be reflected in a Regulation which the European Commission will adopt in 2012 to amend Regulation No 1418/2007.

Italian exporters to reduce transport costs and reduce transport distances when using the most direct transport route via Austria to Germany.

3.2.2. Permits, licenses related to handling with End of Waste candidate as waste

In general, the situation for waste collectors and processors regarding permits or licenses will not change as the End-of-Waste candidate will become a product at the end of the treatment process.

A relief is expected mainly for traders which will not need any waste licenses when they trade the rubber fraction which has ceased to be waste.

The table below tries to quantify direct costs related to the waste status of the ELT rubber fraction in Italy. The main direct cost items are: bank guarantees (insurance policy) which can amount between 0.1 and 1.5 million € for a 10,000t/year granulator according to the Region/Province, waste transportation licences (about 0.23 million € for the same capacity) and an increase in transportation costs of 30%-40% compared to conventional goods. Administrative costs are more difficult to assess.

Economic Impacts - End-of-Waste status

Cost Item	Waste Vs End-of-Waste	COMMENTS
Bank Guarantee (insurance policy)	€5 - €150/t of annualy handled ELT	A recovery plant that converts a waste in a new product/material must comply with the obligations of the national waste legislation and should be authorized by the local authorities to undertake any recycling/recovery activities. In Italy, a Bank Guarantee is always required to ensure the cleanup/remediation finantial cover in case of bankruptcy, fire, etc. The value of that "insurance policy" depends on the annual capacity of the plant, the type of waste (hazardous or not), the type of recovery (R1, R3, etc) and predominantly on the Region/Province in which the facility operates. Indeed, a 10,000 t/year grinder located in Piemonte paid a €1.5 million insurance; another 12.000 t/year plant in Puglia paid only €100,000 to perform the same recovery operation (production of granulates and powders). Those data refer to grinding facilities but the same values could be appropriate also for recovery operators (acoustic panel manufacturers, moulded object manufacturers or other companies that utilize granulates and powders (waste) to produce new items
Waste Transportation Licence	€3.1 million (> 200 kt/y); €1 million (60 - 200 kt/y), €0.5 million (15 - 50 kt/y), €0.23 million (6 - 11 kt/y), €0.07 million (3-6 kt/y)	To collect and transport waste items in Italy, a special license is needed, the hauler must register to the "Albo Nazionale dei Gestori Ambientali" (National Register of the Environmental Managers) and -based on the handled quantities - the company must pay an annual fee and a Bank Guarantee may be required. The payment of the guarantees indicated in C4 are required to transport the quantities of non-hazardous wastes in brackets. Moreover, an annual fee (€1,000/y) is necessary for the Albo's registration.

Economic Impacts - End-of-Waste status

Cost Item	Waste Vs End-of-Waste	COMMENTS
Transportation Costs	+30% to +40% vs. conventional goods	Because of the waste transportation license, the transportation rates for non hazardous wastes are 30-40% more expensive than the rates applied to conventional goods. Moreover, the greater competition between companies that transport goods makes it easier to get cheaper fares for non waste items, as a consequence of that, waste granulates are more expensive to be delivered than similar goods. Indeed the waste transportation rate often includes the costs for an "empty return" of the truck, while the haulers that transport goods always optimize the return trip
Administrative costs		Besides the direct costs, the administrative burdens of the waste legislation tend to increase the overall costs. To transboundary transport the granulates/powders that fall under the waste legislation should dramatically increase the burdens depending on the destination country, the prior notification and authorization of the shipment may be necessary and the process could take more than one month. Unfortunately, to quantify that cost category a comparative analysis of two similar activities (waste and non waste) should be necessary.

3.3. Legal impacts

3.3.1. Shipment/Transport

The end of waste status will reduce administrative burdens related to shipment and transport without creating environmental impacts.

Free movement of goods in EU

In the situation where rubber fraction/powder are waste, the transboundary movements of this waste would have to follow the procedures of the Waste Shipment Regulation (EC) N°1013/2006.

If they are removed from the waste status, they will be submitted to free movement of goods in the EU. This principle is laid down by Articles 26, 27, 34, 35 and 36 of the Treaty on the functioning of the European Union (TFEU).

In order to determine the law applicable to the shipment, the contractual parties are free to choose the applicable law :

- Transfer between UE Member States : Regulation (EC) No 593/2008 on the law applicable to contractual obligations (Principle : freedom of choice of the law)

- Export out of UE :

It depends on the country that receives the good. If the export country considers it as waste, The Basel Convention/EU Regulation on waste shipment is still enforceable, if the export country considers it as product the International Conventions about products apply (i.e. : CISG (Convention on the International Sale of Goods), or The Hague conventions etc.).

3.3.2. Liability

In the European Union, waste is often submitted to the extended producer responsibility system (Waste Framework Directive 2008/98/CE), whereas a non-waste is subject to a product liability, which is less extensive.

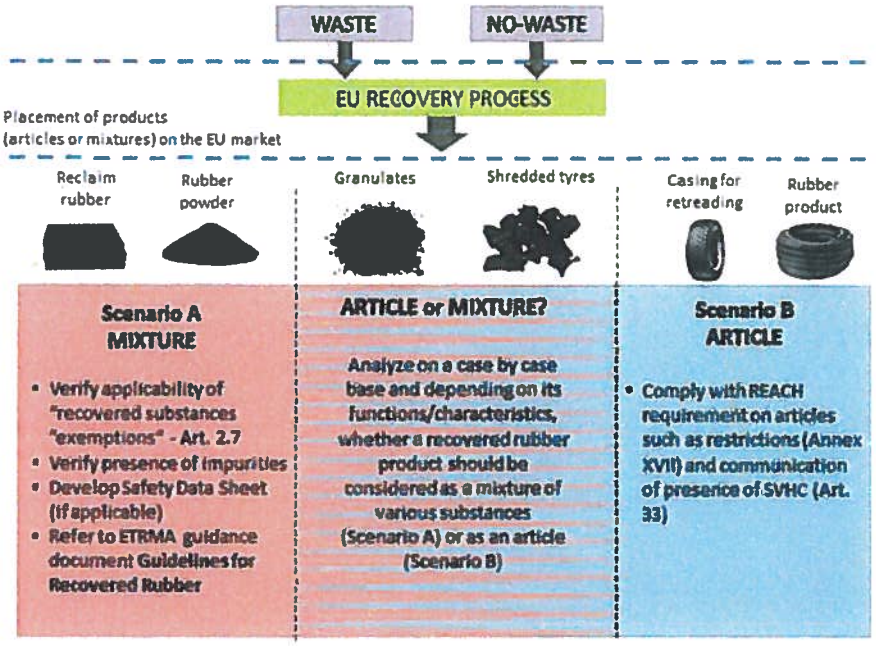
Once waste ceases to be waste, the producer is not liable anymore for its recovery and / or disposal, but responsible for the quality / compliance of its "product". As a consequence of this, the granulator (marketer) is the only entity liable for product quality, hence it will pull up product quality.

3.3.3. REACH

Article 2(2) of REACH provides that "waste as defined in Directive 2006/12/EC of the European Parliament and of the Council is not a substance, mixture or article within the meaning of Article 3 of this Regulation." Therefore, REACH requirements for substances, mixtures and articles do not apply to waste. However, where waste is recovered into substances that are placed on the market for further commercial use[24], REACH applies (as it does to any other substance placed on the market) from the point a recovered substance ceases to be waste and waste management controls no longer apply. The point at which waste ceases to be waste is a matter for waste legislation, and REACH does not have any bearing on that.

In order to properly identify the requirements to be fulfilled, it is necessary to understand whether a recovered product placed on the market, according to REACH, is a substance/mixture (Scenario A) or an article (Scenario B). Scenario A is the most complex in terms of obligations but it can benefit from a number of conditionally granted exceptions related to registration (Title II), downstream users (Title V) and evaluation (Title VI) obligations.

[24] This means that EU rubber recovery operators and recovered rubber importers are considered as manufacturers and importers of recovered substances or mixtures and need to assess their obligations under REACH as any other importer or manufacturer of mixtures or articles.



How to understand whether the outcome of the recovery process is an article or a substance/mixture

REACH defines an "article" as "an object which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition" whilst a "mixture" is defined as "a mixture or solution composed of two or more substances".

In laymen's terms, is the function of the product determined more by its physical characteristics that result from the chemistry of the material(s) the product is made of (e.g. density, ductility, electrical conductivity, hardness, magnetism, melting point, etc.) or by its physical appearance (e.g. length, depth, height, texture, surface, ...). In the first case, it is considered as a mixture, in the latter as an article. If the answer cannot be unambiguously determined, a deeper assessment is needed.[25]

Given the big range of applications in which recovered rubber is used, it is not possible to provide a unique answer for products such as rubber granulates and shredded tyres. ETRMA recommends to analyze on a case by case basis and depending on its functions/characteristics, whether a recovered rubber product should be considered as a mixture of various substances or as an article. Recovery operators and importers of recovered rubber products can perform such assessment based on the definition of "article" (REACH, Art 3.3) and on the criteria provided by ECHA in the Guidance on requirements for substances in articles.

[25] For a deeper assessment, the workflow (Figure 2: Decision-making on whether an object is an article or not) provided in the "ECHA Guidance on Substances in articles" can be of help – see http://echa.europa.eu/documents/10162/13632/articles_en.pdf p.7

1. SCENARIO A – Placement of recovered substances/mixtures on the EU market

Conditions to be met to benefit from the "recovered substance status"

Those conditions that have to be met, in order to benefit from the "recovered substance" status[26], are the following:

- the substances must have been registered (by any legal entity in any supply chain) and must be recovered in the EU (Article 2(7)(d));

- the substance that results from the recovery process is the same as the substance that has been registered [...] (Article 2(7)(d) i);

And

- the relevant safety information required by Articles 31 ("Requirements for Safety Data Sheets") or 32 ("Duty to communicate information down the supply chain for substances on their own or in mixtures for which a safety data sheet is not required") relating to the substance that has been registered is available to the establishment undertaking the recovery." (Article 2(7)(d)ii).

These exemptions notably do not cover Title IV (Information in the supply chain), Title VII (Authorization) and Title VIII (Restrictions). Hence, if listed in Annex XVII (list of restricted substances) or Annex XIV (list of substances subject to authorization), those substances might be totally prohibited i.e. excluded from being brought back into the product cycle.

How to deal with impurities

Independently on whether the recovery occurs in or outside the Community, when the presence of chemicals, which are derived from substances originally present in the recovered polymeric material, is not intentional, these chemicals can be regarded as impurities of the recovered polymer substance, unless the chemical constituent is present in quantities above 20% (in this case, the constituent should be seen as a substance in a mixture, even if its presence is non-intentional).

The ECHA Guidance on Substance Identification defines an impurity as "an unintended constituent present in a substance as produced. It may originate from the starting materials or be the result of secondary or incomplete reactions during the production process. While it is present in the final substance it was not intentionally added."

Recovered substances may contain impurities which may distinguish them from corresponding materials not deriving from recovery processes. This is in particular the case when recovered materials contain unintended constituents which have no specific function for the recovered material and the only reason for their presence in the recovered material is that they were part of the input waste for the recovery process. The content and nature of such unintended constituents may vary significantly from batch to batch (e.g. in time and location). Full knowledge of the exact composition in each such case may require substantial analytical efforts. While such constituents may have originally been intentionally added as substances to form a mixture, their presence in the recovered material may be unintended (depending on whether these constituents have a specific function or not) and therefore, they can be considered as impurities, which do not require separate registration.

Constituents present in quantities above 20% (w/w) should, however, in general not be considered as impurities but as separate substances in a mixture. However, in the case that recovered material is intentionally selected for the presence of certain constituent(s), those constituents should also be considered to be separate substances, even if they are present in smaller quantities than 20% (w/w).

[26] Should these conditions not be met, all the requirements related to REACH manufacturers and importers need to be fulfilled.

During the mechanical separation of mixed waste it is often impossible to reach 100% purity free of alien elements. These alien elements often are either extraneous to the waste stream per se (for example, and depending on the waste stream, stones, plastics, sand, etc.) or extraneous to the material object of the recovery but part of the final product that became waste (for example, paints, coatings, etc.), of which the composition and total amount are difficult to precise. After appropriate sorting and separation, these fractions should be present in the recovered material only in very small fractions. In this case, such elements can be considered as impurities that do not need to be registered.

Even if impurities do not have to be registered separately, they may be relevant for the hazard profile as well as the classification and labelling of the substance or mixture in which they occur. Relevant risk management measures may need to be recommended in SDS or information according to Art. 32. These risk management measures can consist e.g. in further purification steps to eliminate impurities or measures to ensure the safe handling of the substance with the impurities in it.'

In the case of recovered rubber, the relation between chemicals present in the recovered material and their function in the final application needs to be analysed on a case by case basis. In general, substances that may be considered as impurities because they do not have an intended function in the recovered material could be for instance pigments, residual vulcanisation accelerators/retarders, cross-linking agents and odour agents. On the other end, registration may be required for the monomers of the recovered polymers, fillers and any other substances which still play an intended role in the final application.

Any substances exceeding the 20% concentration (to be calculated not on the total weight of the recovered material but on the weight of the substance which they refer to), cannot be considered as impurities and therefore they are subject to registration. This could be the case of aromatic oils.

ETRMA has identified an indicative list of recovered substances that, according to its best available knowledge, could be subject to registration requirements by rubber recovery operators unless conditions for exemptions of Art. 2 (7) d are being fulfilled.

Substance name	CAS #	EINECS #
Monomers		
Isoprene	78-79-5	201-143-3
Buta-1,3-diene	106-99-0	203-450-8
Styrene	100-42-5	202-851-5
Isobutylene	115-11-7	204-066-3
Ethylene	74-85-1	200-815-3
Propylene	115-07-1	204-062-1
1,4-hexadiene	592-45-0	209-756-8
Ethylene norbornene	16219-75-3	240-347-7
Dicyclopentadiene	77-73-6	201-052-9
Fillers		
Carbon black	1333-86-4	215-609-9
Silica	7631-86-9	231-545-4
Calcium carbonate	471-34-1	207-439-9
Oils		
Residual oils (petroleum), solvent-refined	64742-01-4	265-101-6
Residues (petroleum), vacuum	64741-56-6	265-057-8
Residual oils (petroleum), solvent-dewaxed	64742-62-7	265-166-0
Distillates (petroleum), light naphthenic	64741-52-2	265-053-6
Distillates (petroleum), heavy naphthenic	64741-53-3	265-054-1
Distillates (petroleum), hydrotreated heavy naphthenic	64742-52-5	265-155-0
Distillates (petroleum), hydrotreated light naphthenic	64742-53-6	265-156-6
Distillates (petroleum), hydrotreated middle naphtenic	64742-46-7	265-148-2
Distillates (petroleum), solvent-refined heavy naphthenic	64741-96-4	265-097-6
Distillates (petroleum), light paraffinic	64741-50-0	265-051-5
Distillates (petroleum), heavy paraffinic	64741-51-1	265-052-0
Distillates (petroleum), solvent-dewaxed heavy paraffinic	64742-65-0	265-169-7
Distillates (petroleum), solvent-refined heavy paraffinic	64741-88-4	265-090-8
Distillates (petroleum), solvent-refined light paraffinic	64741-89-5	265-091-3
Distillates (petroleum), hydrotreated heavy paraffinic	64742-54-7	265-157-1
Distillates (petroleum), hydrotreated light paraffinic	64742-55-8	265-158-7
Distillates (petroleum), heavy aromatic	67891-79-6	267-563-4
Distillates (petroleum), light aromatic	67891-80-9	267-565-5
Extracts (petroleum), heavy naphthenic distillate solvent	64742-11-6	265-111-0
Extracts (petroleum), heavy paraffinic distillate solvent	64742-04-7	265-103-7
Extracts (petroleum), solvent-refined heavy paraffinic distillate solvent	68783-04-0	272-180-0
Extracts (petroleum), light paraffinic distillate solvent	64742-05-8	265-104-2
Extracts (petroleum), residual oil solvent	64742-10-5	265-110-5
Extracts (petroleum), vacuum residue solvent	91995-70-9	295-332-8
Asphalt, oxidized	64742-93-4	265-196-4
Other		
Sulphur	7704-34-9	231-722-6

The above-mentioned list shows that the substances that are obligated to be registered (in order for recovery operators to benefit from the registration exemption of Article 2(7)(d)) are: monomers, substances present in an amount higher than the impurity level of 20% (fillers), substances with an intended purpose in the mixture (e.g. sulphur).

Recovered rubber may result from mechanical and/or chemical treatment of the original rubber article in order to transform it into a material intended to be used in a new process. The substances intended to be recovered are mainly polymers such as SBR and natural rubber. Therefore the rules imposed by REACH on recovered polymers are also applicable to recovered rubber, i.e. companies undertaking recovery of polymer substances from waste are exempted from the obligation to register the monomer(s) or any other substance(s) meeting the provisions of Article 6(3) in the recycled polymer, provided that these substance(s) constituting the recycled polymer have been registered (Article 2(7)(d)).

In general, besides polymers such as SBR and natural rubber, recovered rubber may also contain substances which still have a function such as fillers (carbon black, silica, ...). Other components/constituents present in the recovered rubber which are not intended to be recovered such as pigments, additives, oils, shall be considered as impurities if present in a concentration below 20%

of the main constituent fraction.[27]

The manufacturers of recovered rubber should also have information on the identity and quantities in which hazardous minor constituents or impurities are present in the recovered material.

As regards oils, as proposed in the ETRMA technical document about Aromatic Oils (May 2009), an oil contained in a recovered mixture (such as for example rubber reclaim) can be considered to be an impurity provided that:

- It is present at less than 20% of the sum of the content of the recovered substances
- It has no specific performance in the final product.

(In order for oil to be less than 20% of the recovered substances, so below the impurity level, the extractable content of recovered rubber (mixture) should be below 16,66%). This approach provides a conservative assumption that all extractable is attributable to one type of oil.

For other substances that were added to the rubber such as fillers (carbon black, silica…) documentation has to demonstrate that they fulfil the exemption requirements of Article 2(7)(d) of REACH.

A recovery operator should make sure that the use of a recovered substance is covered by the registration of the original substance, which is often the case for recovered rubber. If that is the case, the available safety information on the registered same substance may be relevant and adequate for the recovered rubber. The same may not be applicable to impurities (i.e. pigments, additives, etc.) since the Chemical Safety Assessment of the original substance may cover only specific applications. Recovery operators need to generate information on the composition of the recovered material, in order to identify potential hazards and to conclude whether the safety information obtained for the registered substance is applicable for the recovered substance.

Availability of safety information

Even if the first two criteria (i.e. substances are recovered in the EU; sameness of the recovered substance and the original substance) are met, the relevant safety information required by Articles 31 ("Requirements for Safety Data Sheets") or 32 ("Duty to communicate information down the supply chain for substances on their own or in mixtures for which a safety data sheet is not required") relating to the substance that has been registered must be available to the establishment undertaking the recovery." (Article 2(7)(d)ii). This does not mean that the recovery operator needs the SDS of the original substance but he must have available the info of the SDS.

For that purpose, all available information on the components of recovered rubber needs to be taken into consideration. REACH does not give direct access to Safety Data Sheets (SDSs) to actors in the supply chain after the substance has been integrated in articles and/or the substance has become waste. Rules on access to information held by the Agency are specified in Articles 118 (Access to information) and 119 (Electronic public access) of REACH. However, according to the clarification provided by the EU Commission, the recovery installation also must have legitimate access to the information contained in SDSs by other actors. For this, an agreement between the recovery installation and the owner of the SDS is necessary.

For additional information on issues related to fulfilling Art.31 & 32 of REACH, refer to the ECHA Guidance on the compilation of safety data sheets Version 1.0 – September 2011 - APPENDIX 4: Specific issues relevant to the compilation of SDSs for recovered substances and mixtures

[27] Specifically for rubber recovered from tyres, a detailed representative list of substances intended to be recovered, or potentially exceeding the 20% impurity threshold, is provided by industry , accessible via the European Tyre and Rubber Manufacturers Association in the "Guidelines for Recovered Rubber" (www.etrma.org) which includes references to publicly available documents that could help in estimating concentrations of recovered substances and impurities.

Additional obligations (Annex XIV & Annex XVII)

Annex XIV substances (list of REACH prohibited substances unless an authorization has been granted for a specific use).

Authorisation is one of the REACH processes for managing the risks of hazardous substances. Substances that are subject to authorisation may not be used in the EU, unless a company (and their registered users) have been authorised to do so. This will mean that eventually these substances are phased out of all non-essential uses.

Substances to which authorisation will apply are listed in Annex XIV of REACH. For each substance included on Annex XIV, a deadline will be set after which use of that substance in the EU must stop (known as the 'sunset date'), unless Authorised. Some substances may be accompanied by a list of specific uses that do not require authorisation.

Once the sunset date has passed for an Annex XIV substance, only uses which have been specifically 'authorised' (or which do not require authorisation) will be allowed.

Hence where waste is recovered back into substances that are placed on the market for further commercial use, if those substances have been placed in Annex XIV, the "manufacturer" of that recovered substance (on his own or in a mixture) must ensure that he has applied for an authorization or that an authorization has been granted covering the specific uses of the substance (or that those specific uses have been exempted from authorization).

The holders of an authorisation and downstream users that supply mixtures containing the substance must include the authorisation number on their product labels. Downstream users that are relying on an authorisation granted to an actor further up their supply chain must ensure that they use the substance within the conditions of the authorisation. They must also notify ECHA that they are using the substance within 3 months of first receiving it.

Annex XVII substances

As for any other substance, the manufacturer placing substances on the market that are recovered from waste has to comply with all restrictions (on manufacture, use and placing on the market) applying to Annex XVII substances (i.e. restricted substances).

2. SCENARIO B – Placement of recovered articles on the EU market

Substances of Very High Concern (SVHCs) related obligations
Suppliers of articles, either as manufacturer or importer, have lighter duties under REACH compared to the manufacturers, importers & downstream users of substances. Articles are subject to the notification/communication requirements listed in Art. 7, Art. 33, and Art. 34.

Art. 7 - Registration and notification of Substances of Very High Concern (SVHCs) in articles
As regards registration of substances in articles, Art. 7 mentions that, "Any producer or importer of articles shall submit a registration for any substance contained in those articles, if both the following conditions are met:

(a) the substance is present in those articles in quantities totalling over one tonne per producer or importer per year;
(b) the substance is intended to be released under normal or reasonably foreseeable conditions of use."

If an article has an accessory function, which is achieved through the release of substances or mixtures, then the release is to be regarded as intended.

Notification is nevertheless not required if the producer or importer of articles can exclude exposure to humans or the environment during normal or reasonably foreseeable conditions of use, including disposal. Exposure to a substance in an article is possible even if the substance is not released from the article, but just on the surface of it. Therefore, a producer/importer wanting to demonstrate 'exclusion of exposure' has to ensure that the SVHC on the Candidate List does not come into contact with humans or the environment, regardless of its dangerous properties and taking all exposure routes at all life cycle stages into consideration.

In certain cases, ECHA may decide to impose the registration of any substance contained in an article if those substances are present in articles in quantities totalling over one tonne per producer or importer per year and if ECHA has grounds for suspecting that:

(i) the substance is released from the articles, and
(ii) the release of the substance from the articles presents a risk to human health or the environment;

This does not apply to substances that have already been registered for that use.

Notification and communication obligations related to SVHCs in articles
As regards the notification obligation, this applies to substances listed on the Candidate List (for Authorization) present in articles if certain conditions are fulfilled:

(a) the substance is present in those articles in quantities totalling over one tonne per producer or importer per year;
(b) the substance is present in those articles above a concentration of 0.1% weight by weight (w/w) i.e. >1,000 ppm concentration

Art. 33 Duty to communicate information on substances in articles
1. Any supplier of an article containing a SVHC in a concentration above 0.1% weight by weight (w/w) shall provide the recipient of the article with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance.

2. On request by a consumer any supplier of an article containing a SVHC in a concentration above 0.1% weight by weight (w/w) shall provide the consumer with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance.

Those obligations apply even in cases, where the total quantity of substance in the produced / imported article is below 1 tonne per year.

Art. 34 Duty to communicate information on substances and mixture up the supply chain
Any actor in the supply chain of a substance or a mixture shall communicate the following information to the next actor or distributor up the supply chain:
(a) new information on hazardous properties, regardless of the uses concerned;
(b) any other information that might call into question the appropriateness of the risk management measures identified in a safety data sheet supplied to him, which shall be communicated only for identified uses. Distributors shall pass on that information to the next actor or distributor up the supply chain.

Restriction (Annex XVII) related obligations

In addition, articles put on the market will need to comply with REACH restrictions, notably re. PAHs whereby "retreaded tyres manufactured after 1 January 2010 shall not be placed on the market if their tread does contain extender oils exceeding
— more than 1 mg/kg (0.0001 % by weight) BaP (Benzo(a)pyrene), or,
— more than 10 mg/kg (0.001 % by weight) of the sum of all listed PAHs.

Since additional REACH restrictions might apply in the future, the recovery operator needs to monitor new REACH restrictions which could apply to the recovered substance/mixture.

In view of the above, rubber fractions when ceasing to be waste are covered by Reach provisions, as recovered article or mixture, and should benefit from the exemptions related to Art. 2 7 d) providing recovery operators can demonstrate compliance with the requirements.

3.3.4. Construction Products Directive (89/106/EEC) / Construction Products Regulation (305/2011/EU) and CE mark[28]

According to the Construction Products Regulation (305/2011/EU), any product which is produced for incorporation in a permanent manner in construction works, including both buildings and civil engineering works, is considered as "construction product". There are several examples of rubber products that are produced for an intended use in construction. From a technical point of view, rubber powder used to modify bitumen properties could be considered as a construction product, whilst outdoor sport surfaces using ELT rubber infill are out of the scope of the CPD.
If rubber granulates are considered a product, Member States shall take all necessary measures to ensure that the Construction Products which are intended for use in works, may be placed on the market only if they are fit for this intended use, that is to say they have such characteristics that the works in which they are to be incorporated, can, if properly designed and built, satisfy the essential requirements.

For that purpose of this Directive, appropriate standards and technical approvals shall be created and referred to as 'technical specifications' in each case, that should be harmonized standards adopted by CEN, according to mandates given by the Commission in conformity with CPD.

Member States shall presume that the products are fit for their intended use if they enable works in which they are employed, provided the latter are properly designed and built, to satisfy the essential requirements and those products bear the CE marking before putting on the market.

The EC mark is the warranty that a product complies with the relevant national standards transposing the harmonized standards, or in the case there was not such a standard that they comply with a European technical approval scheme or they comply with the national technical specifications if as much as harmonized specifications do not exist.

In the case of granulate, there is not for the time being any harmonized standard nor European Technical approval scheme, and possibly there is not also national technical specification. In this particular case the grinder is considered as manufacturer, and the product is to be submitted for a declaration of conformity.

As a positive consequence of that Member States shall not impede the free movement, placing on the market or use in their territory of products which satisfy the provisions of CPD.

[28] The Construction Products Directive (CPD) has been repealed by the Construction Products Regulation. The CPR has already entered into force. However, the main parts of its substantial Articles shall apply first from 1 July 2013. Until then, the CPD therefore remains in application. More information on the CPD/CPR - http://ec.europa.eu/enterprise/sectors/construction/declaration-of-performance/index_en.htm

3.3.5. Quality and Control

The waste is in principle not subject to quality requirements or is subject to less restrictive standards than a product or to any contractual dispositions.

However, a product meets quality requirements. These quality requirements-compliance pull up the quality of the good coming from a waste, creating (increasing) its value.

3.3.6. Insurance

The recycler, at the origin of the end of waste, must take out a product insurance policy.

4 Conclusions

Thanks to the support from ELT management companies, ETRMA has developed proposals for end-of-waste criteria for granulates, powder and chips obtained further to the processing of the rubber fraction from tyres that:

- are in compliance with all the conditions given by Article 6 of the Waste Framework Directive;
- would be operational in practice; and
- would deliver clear benefits.

- **It can be expected that industry will benefit strongly from harmonised, EU-wide end-of-waste criteria for granulates, powder and chips obtained further to the processing of the rubber fraction from tyres**

  Tyre collection and recovery still costs about €600 million annually, an extra cost which is mostly paid by consumers. The industry is mature enough to turn worn-out tyres into a true resource thereby cancelling those costs for the benefit of consumers and contributing to the EU resource efficiency roadmap. There is a potential of additional annual value of at least €1 bn over the next decade but a major obstacle is the persisting qualification of the derived products of worn-out tyres as waste under the EU Waste Directive 2008/98/EC.

- **The end-of-waste criteria allow for consolidating the status of compliant granulates/powder and chips as high-quality secondary raw material.**

  The proposed end-of-waste criteria imply reinforcing the quality assurance. This will further improve the reliability of granulates/powder and chips as high-quality raw material and strengthen consumer confidence in the product.

- **Environmental benefits**

  The recycling of ELTs has positive environmental benefits not only in terms of preservation of resources but also in terms of avoided impacts such as greenhouse gases, ... There will be no adverse impacts on the environment further to the introduction of the end-of-waste criteria as the control regime under the waste status does not provide for additional environmental protection. In addition, granulates, powder and chips will become subject to the provisions of the REACH legislation, either as recovered article or recovered mixture.

ANNEXES

ANNEX 1: National ELT related legislation in Europe

Belgium

Flanders - Environmental Agreement about the collection/recovery obligation of used tyres of 11/06/2010 (M.B. - 21/12/2010)
VLAREA (Vlaams Reglement voor Afvalvoorkoming en –beheer/Flemish Regulation on Waste Prevention and Management)

Walloon region - Environmental Agreement about the collection/recovery obligation of used tyres of 23/01/2003 - (M.B. 12.05.2003) - **repealed** -

Brussels-Capital region – Order of the Executive of the Brussels-Capital Region of 18/07/2001 (M.B. 27/09/2002) - **repealed** -

Bulgaria
- ELT Decree № 183 of 20.08.2010 (Prom. SG. issue 69 of 3 September 2010, amended (SG. issue 29 of 8 April 2011)

Czech Rep.
- Draft new Act on waste amending Act on Waste 185/2001 Sb (under discussion)
- Act on waste and amendment of some other acts, in the wording of later regulations – 185/2001 Sb
- Decree of Ministry of Envt. of the Czech Rep. on details of waste management (consolidated version) - 383/2001 Sb
- Decree of Ministry of Envt. of the Czech Rep. on the details of the manner of take-back procedure of certain products - 237/2002 Sb.

Denmark
- Executive Order No. 148 of 16 February 2009 (BEK 148) - Ecotax law

Estonia
Waste Act (RT I 2004, 9, 52, 2006, 28, 209) amended by RT I 2007, 19, 94

Finland
- Council of State (decision no. 1246, 12 October 1995)
- Government Decree n°583 of 2004

France
- Decree n° 2011-153 of 4 February 2011, codified into the French Environmental Code (see articles R 543-153 to 171)
- Ordinance n° 2010-1579 of 17 December 2010 (adaptation measures - waste) - J.O. 18 December 2010 (Article 8-IV-III)
- Law n° 2010-788 of 12 July 2010 - " Grenelle II Law" – J.O. of 13 July 2010" - Art. 205 (Sanctions)
- Order of 23 July 2004 about the communication of information related to the placing into the market and the recovery/disposal of tyres (J.O n° 208 of 7 September 2004 page 15767 text n° 10)
- Order of 8 December 2003 about the collection of used tyres (J.O n° 294 of 20 December 2003 page 21825)
- Decree n°2002-1563 of 24 December 2002, codified into the French Environmental Code (see articles R 543-137 to 152)

Greece
- Presidential Decree 109/04 (5/3/2004) in Official Gazette A75
- Law 2939/2001

Hungary
- Bill on Waste (notified to the EU COM) - standstill period until 30/3/2012
- Decree implementing Act LXXXV (Hungarian Environmental Product Charge law)
- Hungarian Environmental Product Charge law (HEPCL) – Act LXXXV - Amendments to Act LVI of 1995
- Government decree No. 53/2003 (IV. 11.), Act LVI of 1995 - on Environmental Protection Product Charges
- Act XLIII of 2000 on waste management
- Decree No. 10/1995. (IX. 28) KTM - on the Implementation of Act No. LVI of 1995,

Italy
- Ministerial Decree 11 April 2011, n. 82 (9/6/2011 G.U.) on ELT management
- Legislative Decree 3 April 2006, n.152 (14/4/2006 G.U.)

Latvia
- Natural resources tax on goods harmful to environment (01.01.2006)
- Regulations of the Cabinet of Ministers No 404 "On order for relief from duties for payment of natural resources tax on goods harmful to environment", (tyres, batteries), of 16 May 2006

Lithuania
- Law on Environmental Pollution Tax introducing taxes on tyres and other products (13 May 1999 No VIII-1183 as last amended on 29 January 2008 - X-1438)
- Law on Waste Management, 16 June 1998 (VIII-787) as last amended on 28 June 2005 (X-279)
- National Strategic Waste Management Plan (resolution of Lithuanian Government Nr 1224 of October 2007)

(The) Netherlands
- Decision on the management of tyres of 9 December 2003 and amendments

Poland
- Act of 11 May 2001 on economic operators' obligations in the scope of managing certain types of waste and on the product and deposit charges (J. of L. of 2007 No. 90, item 607)

Portugal
- National Decree-Law n.° 73/2011, June 17th (Transposition of the Waste Framework Directive)
- National Decree-Law n.° 111/2001, 6 April 2001 (Principles and Norms applied to ELT management), revised by the National Decree-law n.° 43/2004, 2 March 2004

Romania
- GD 170/2004 of 12 February 2004 on waste tyre management and the implementing rules of GD 170/2004
- Ordinance nr. 386 of 24 June 2004 on the approval of norms re. the procedure and criteria of authorization for the ELT management companies

Slovakia
- Act 223/2001 Coll., Act on Waste and the Amendment of Some Other Acts, as amended ("Act on Waste")

Slovenia
- Environmental Protection Act
- Regulation on the management of ELTs (OG RS. 63/2009)

Spain
- Law 22/2011 of 28 July 2011 on waste and contaminated soils (BoE n°181 of 29 July 2011)
- Amendment of Royal Decree 1619-2005 (BoE n°75 of 27 March 2010)
- Royal Decree 1619-2005 of 30 December 2005 (BoE n°2 of 30 January 2006)
- National Integrated Waste Management Plan (2008 - 2015) - (BoE n°49 of 26 February 2009)

Sweden
- Ordinance 1994/1236 and amendments

Non EU27

Norway
- 1994 Ordinance integrated in 2004 in the "Forskrift om gjenvinning og behandling av avfall (Avfallsforskriften)" - Chapter V

Turkey
- ELT Management Regulation (November 25, 2006)

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Onderwerp

Rubbergranulaat voor kunstgrasvelden: afvalstof of niet-afvalstof

Geachte heer ;

U hebt bij brief van 18 maart, referentie AJV/cdu nr. 05-117, aan het ministerie van VROM verzocht een standpunt uit te spreken over rubbergranulaat specifiek bestemd voor kunstgrasvelden. Deze brief is door het ministerie van VROM doorgestuurd naar SenterNovem omdat SenterNovem in opdracht van het ministerie van VROM thans de werkzaamheden rond de EVOA uitvoert en in het verlengde daarvan ook de vragen afvalstof of niet-afvalstof die zijn gericht aan het ministerie behandelt. Op basis van uw brief is contact met u opgenomen om nadere informatie te verkrijgen over het productieproces van het granulaat en de specificaties van het granulaat voor kunstgrasvelden. In uw brief van 2 mei 2005, referentie AJV/cdu nr. 05-160, heeft u de aanvullende informatie verstrekt en zakjes met monsters van zwart rubbergranulaat, Granuflex® SBR 0520, en gekleurd rubbergranulaat, Granufill® OG 0520, bijgevoegd. U geeft aan dat er in Nederland vier specifieke producenten zijn van rubbergranulaat voor kunstgrasvelden. Ten behoeve van de toepassing van het rubbergranulaat voor kunstgrasvelden is bovendien een norm ontwikkeld en in 2004 vastgesteld door het Instituut voor Sportaccommodaties, de norm ISA-M37.a. over instrooirubber.

In reactie op de door u gestelde vraag of rubbergranulaat voor kunstgrasvelden als een niet-afvalstof is te kwalificeren, en daarbij gelet op de door u overgelegde informatie, bericht ik u het volgende. Ik kom gelet op de jurisprudentie en op basis van de door u verstrekte gegevens tot de conclusie dat de rubbergranulaten voor kunstgrasvelden die voldoen aan de norm ISA-M37.a. zijn aan te merken als een niet-afvalstof. Het productieproces om te komen tot deze rubbergranulaten is te kwalificeren als een beoogd produceren van dit materiaal waarbij de productie wordt gestuurd om aan de specificaties te voldoen en dat het materiaal zonder enige aanvullende bewerking in de beoogde toepassing is in te zetten. De overige aandachtspunten met betrekking tot het onderwerp afvalstof of niet-afvalstof leveren geen andere visie op.

SenterNovem

Tot slot merk ik op dat het ingenomen standpunt slechts de visie geeft van de Nederlandse bevoegde autoriteit. Buitenlandse bevoegde autoriteiten zullen een eigen (afwijkend of bevestigend) standpunt (kunnen) innemen. Bij overbrenging van materialen waarvoor de vraag afvalstof of niet-afvalstof is gesteld, zult u daar rekening mee moeten houden en zult u ook van de buitenlandse bevoegde autoriteit een positief standpunt moeten verkrijgen.

Ik ga er van uit u voldoende te hebben geïnformeerd.

Hoogachtend,

Manager Uitvoering EVOA en besluiten

16 MRT 2007

SenterNovem

7

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Datum	Contactpersoon	Kenmerk	Bijlage(n)
15 MRT 2007	Dhr. drs.	DUA0779097	-

Onderwerp: banden voor loopvlakvernieuwing: afvalstof/ niet afvalstof

Geachte heer Verhoef,

De Vereniging VACO heeft bij SenterNovem een verzoek ingediend om te motiveren in hoeverre karkassen (autobanden, die niet meer voldoen aan de veiligheidscriteria) die na keuring geschikt bevonden zijn voor loopvlakvernieuwing aan te merken zijn als zijnde een niet-afvalstof.

Op basis van het gesprek van 8 december 2006 tussen de Vereniging VACO en SenterNovem en het daaraan gekoppelde bedrijfsbezoek aan Kargro te Montfoort van 10 januari j.l. kan de situatie als volgt worden beschreven:

Op het moment dat een band door slijtage van het loopvlak niet meer geschikt is voor gebruik zijn er twee opties: de band komt ofwel in aanmerking voor loopvlakvernieuwing of de band wordt vershredderd om primair het rubber als granulaat terug te winnen voor een nuttige toepassing elders (het zog. verschrotten van karkassen). Alleen banden die nog voor loopvlakvernieuwing in aanmerking komen hebben een economische restwaarde.

In de praktijk zijn er twee afzonderlijke situaties die tot loopvlakvernieuwing leiden. In dit traject is het controle- cq. selectiemoment waarop beslist wordt of de band van een nieuw loopvlak kan worden voorzien erg van belang.

De *eerste* situatie heeft betrekking op banden van onder meer vliegtuigmaatschappijen, streekvervoersbedrijven en grotere transportondernemingen. De eigenaar laat op zijn eigen terrein door een keurmeester van het bandenloopvlakvernieuwingsbedrijf beoordelen welke banden van een nieuw loopvlak kunnen worden voorzien en welke niet. De eigenaar geeft de opdracht om de voorgeselecteerde geschikte banden van een nieuw loopvlak te voorzien en krijgt zijn eigen banden na het proces van loopvlakvernieuwing terug. Hij ontdoet zich hiermee niet van de eigen gebruikte banden.

De *tweede* situatie heeft betrekking op banden van de overige transportondernemingen. Hierbij ontdoet de eigenaar zich van de eigen gebruikte banden. Een intermediair (bijv. garage, bandenbedrijf of -inzamelaar) beoordeelt of de banden voor loopvlakvernieuwing geschikt zijn en bepaalt tevens daarbij de restwaarde die de ontdoener voor zijn banden ontvangt. De eigenaar schaft zelf nieuwe banden aan of andere banden die van een nieuw loopvlak zijn voorzien. Hij ontvangt zijn eigen banden dus niet retour. De keuring op geschiktheid voor loopvlakvernieuwing zal in dit traject voor het overgrote deel van de gevallen plaatsvinden op het terrein van de eigenaar, net als in het eerste traject.

Na het keuringsmoment worden de voor loopvlakvernieuwing geschikte banden overgebracht naar de inrichting waar het loopvlakvernieuwingsproces zal plaatsvinden. Tijdens dit proces vindt er nog een extra voorcontrole plaatst en zal er een beperkte uitval (enkele procenten) optreden als gevolg van later blijkende ongeschiktheid van de band om vernieuwd te worden.

Visie VACO
De VACO stelt dat het keuringsmoment het moment zou kunnen zijn waarop de banden die met zekerheid een toepassing krijgen als band met een vernieuwd loopvlak, de status niet-afvalstof zouden moeten kunnen krijgen. Hierbij wordt verwezen naar de VN-reglementen met de nummers ECE-R108 en ECE-R109. Deze reglementen zijn omgezet in Europese regelgeving met de nummers: 2001/509/EG en 2001/507/EG.

De hiervoor genoemde reglementen/regelgeving hebben betrekking op enerzijds over de kwaliteit van het uiteindelijke produkt (de vernieuwde band) en anderzijds over het proces van het vernieuwen zelf en de certificering daarbij (met inbegrip van het voorafgaande keuringsproces).

Reactie SenterNovem
In reactie op uw verzoek deel ik u mee dat SenterNovem in opdracht van de Minister van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer vragen over afvalstof of niet-afvalstof behandelt en dat het antwoord namens de Minister is gegeven.
Met betrekking tot de beoordeling van vragen betreffende het onderwerp afvalstof of niet-afvalstof wordt gekeken naar de definitie van afvalstoffen, naar de jurisprudentie van het Hof van Justitie EG en van de Raad van State over dit onderwerp. Tevens worden de aanwijzingen uit het Landelijk afvalbeheerplan als richtsnoer gehanteerd. De aanwijzingen zijn ontleend aan de jurisprudentie tot begin 2001 van het Hof van Justitie EG en van de Raad van State.

De definitie van het begrip afvalstof, vastgelegd in artikel 1.1, eerste lid, van de Wet milieubeheer (Wm) is ontleend aan de Richtlijn 2006/12//EG. Deze luidt:
'Alle stoffen, preparaten of andere producten (...), waarvan de houder zich ontdoet, voornemens is zich te ontdoen of zich moet ontdoen'.

Gegeven de jurisprudentie in de zaak C-9/00 (Palin Granit Oy), arrest d.d. 18-4-2002, dient het begrip afvalstoffen ruim te worden uitgelegd. Nadien is dit in het arrest C-457/02 (Antonio Niselli), arrest d.d. 11-11-2004, in overweging 45, nogmaals herhaald. Overwogen is:
"Gelet echter op de verplichting om het begrip afvalstoffen ruim uit te leggen teneinde de nadelen en de schadelijke gevolgen die zij naar hun aard met zich brengen, te beperken, moet een beroep op deze redenering met betrekking tot bijproducten worden beperkt tot situaties waarin het hergebruik van een goed, materiaal of grondstof niet slechts mogelijk, maar zeker is, zonder voorafgaande bewerking en als voortzetting van het productieproces (arrest Palin Granit, reeds aangehaald, punt 36)."

Overweging 48 van het Niselli-arrest stelt:
"Deze zienswijze geldt evenwel niet voor consumptieresiduen die niet kunnen worden aangemerkt als 'bijproducten' die worden verkregen bij een productieproces of door delving en die verder in het productieproces kunnen worden hergebruikt."

Uit bovenstaande blijkt dat er onderscheid dient te worden gemaakt tussen een productie- en consumptieresidu met daarbij de vermelding dat een consumptieresidu te allen tijde een afvalstof is. Voor de productie van banden met een nieuw loopvlak wordt gebruik gemaakt van afvalstoffen in de vorm van karkassen. Deze afvalstoffen moeten worden gezien als consumptieresidu, die vervolgens worden bewerkt. Er is dus geen sprake van een voortzetting van het productieproces, zonder voorafgaande bewerking.

Overweging 52 van het Niselli-arrest stelt voorts:
"……Volgens de toelichting van Niselli zijn de betrokken materialen vervolgens gesorteerd, hebben zij mogelijk bepaalde handelingen ondergaan en vormen zij een voor de staalindustrie bestemde secundaire grondstof. In zulk een context moeten zij evenwel als afvalstoffen gekwalificeerd blijven tot zij daadwerkelijk zijn gerecycleerd tot ijzer- en staalproducten, met name tot zij in het bewerkingsproces waarvoor zij zijn bestemd, afgewerkte producten vormen. In de daaraan voorafgaande stadia kunnen zij immers nog niet als gerecycleerd worden beschouwd, aangezien dat bewerkingsproces niet is voltooid.
……"

Gelet op de bovenstaande overweging uit het arrest Niselli verliezen afvalstoffen pas het predikaat afvalstof als zij daadwerkelijk zijn gerecycleerd tot een nieuwe product. In voorafgaande stadia is het bewerkingsproces niet voltooid en kan de afvalstof niet als gerecycleerd worden beschouwd. Dit resulteert erin dat banden die na het keurmoment in aanmerking komen voor loopvlakvernieuwing het predikaat afvalstof blijven behouden tot het moment dat het bewerkingsproces is voltooid.

Bovenstaande wordt nogmaals bevestigd door de uitspraak van de Afdeling Bestuursrecht van de Raad van State (ABRvS) van 20 maart 2001, nr. E03.96.0707. De Afdeling heeft uitgemaakt dat (auto)banden die niet voldoen aan de nationale keurings- en kwaliteitseisen en die een ingrijpende behandeling dienen te ondergaan om weer voor hun oorspronkelijke doel gebruikt te kunnen worden, afvalstoffen zijn.

De conclusie met betrekking tot uw verzoek luidt dan ook dat banden die betrekking hebben op de eerste situatie, gegeven het feit dat hier geen sprake is van 'het zich ontdoen van…', het predikaat niet-afvalstof krijgen.
Voor wat betreft de banden die betrekking hebben op de tweede situatie laat de regelgeving op dit moment geen ruimte om deze banden, waarvan de eigenaar zich heeft ontdaan en die in aanmerking komen voor loopvlakvernieuwing, te bestempelen als niet-afvalstof. Deze banden blijven het predikaat afvalstof behouden tot het moment dat het bewerkingsproces is voltooid. Dat het proces van bandenvernieuwing verloopt via een gecertificeerd proces, volgens de al genoemde VN-reglementen en daaruit voortkomende Europese regelgeving, leidt niet tot een andere conclusie.

De banden uit de eerste situatie zullen alleen dan het predikaat niet-afval hebben, indien deze banden gescheiden van de banden uit de tweede situatie worden ingezameld. Het samenvoegen van de banden uit situatie 1 en 2 resulteert in het feit dat de gehele partij banden als afvalstof dient te worden aangemerkt.

Tenslotte deel ik u mee dat SenterNovem voornemens is deze reactie twee weken na de verzending ervan op internet te plaatsen op de site "www.uitvoeringafvalbeheer.nl". Indien u hier bezwaar tegen heeft verzoek ik u dit schriftelijk aan mij mee te delen.

Ik ga er van uit u hiermee voldoende te hebben geïnformeerd.

Hoogachtend,

Manager EVOA en Besluiten

wrap

Material change for a better environment

Environment Agency

Quality Protocol

Tyre-derived rubber materials

End of waste criteria for the production and use of tyre-derived rubber materials

This Quality Protocol was funded by Defra and the Welsh Assembly Government (WAG) as a business resource efficiency activity. It was developed by the Environment Agency and WRAP (Waste & Resources Action Programme) in consultation with Defra, WAG, industry and other regulatory stakeholders. The Quality Protocol is applicable in both England and Wales. It sets out end of waste criteria for the production and use of tyre-derived rubber materials.

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Foreword

Background

Uncertainty over the point at which waste has been fully recovered and ceases to be waste within the meaning of Article 1(1)(a) of the EU Waste Framework Directive (2006/12/EC) has inhibited the development and marketing of materials produced from waste which could be used beneficially without damaging human health and the environment. In some cases, this uncertainty has also inhibited the recovery and recycling of waste and its diversion from landfill.

Interpretation of EU legislation is ultimately a matter for the Courts and there is now a substantial body of case law on the interpretation of the definition of waste in Article 1(1)(a) of the Waste Framework Directive. Drawing on the principles established in this case law, it is possible to identify the point at which certain wastes cease to be waste and thus when the Waste Framework Directive's waste management controls no longer apply. This identification is the purpose of the Waste Protocols Project.

More specifically, depending on the circumstances of the waste concerned, the project seeks to achieve the following outcomes:

- [illegible]
- [illegible]

What is a Quality Protocol?

A Quality Protocol sets out end of waste criteria for the production and use of a product from a specific waste type. Compliance with these criteria is considered sufficient to ensure that the fully recovered product may be used without undermining the effectiveness of the Waste Framework Directive and therefore without the need for waste management controls.

In addition, a Quality Protocol indicates how compliance may be demonstrated and points to good practice for the use of the fully recovered product. A Quality Protocol further aims to provide increased market confidence in the quality of products made from waste and so encourage greater recovery and recycling.

1. Introduction

Definitions are provided in Appendix A for terms that appear in italics when they are first used.

1.1 What is this Quality Protocol?

1.1.1 This Quality Protocol has been developed by *WRAP (Waste & Resources Action Programme)* and the *Environment Agency* in consultation with industry and other regulatory stakeholders. It is applicable in both England and Wales.

1.1.2 The Quality Protocol sets out end of waste criteria for the production and use of *tyre-derived rubber materials* from source-segregated *waste tyres*. If these criteria are met, tyre-derived rubber materials will normally be regarded as having been fully recovered and to have ceased to be waste.

1.1.3 *Producers* and *users* are not obliged to comply with the Quality Protocol. If they do not, the tyre-derived rubber materials will normally be considered to be waste and *waste management controls* will apply to their handling, transport and application.

1.1.4 Producers of tyre-derived rubber materials should note that this Quality Protocol does not affect the obligation to hold an *environmental permit* and comply with all of its conditions to store and process waste tyres.

1.1.5 Producers of tyre-derived rubber materials should also note that by producing a fully recovered product they may be subject to further legal obligations, e.g. the registration of substances under REACH[1].

1.2 The purpose of the Quality Protocol

1.2.1 This Quality Protocol has four main purposes:

i. clarifying the point at which tyre-derived rubber materials cease to be waste and waste management controls are no longer required;
ii. providing users with confidence that the tyre-derived rubber materials they purchase conform to an *approved material standard*;
iii. providing users with confidence that the tyre-derived rubber materials are suitable for use in *designated applications* including by conforming with *engineering standards* where required; and
iv. protecting human health and the environment (including soil).

In addition, the Quality Protocol describes acceptable good practice for the use of tyre-derived rubber materials (see Appendix D).

[1] Waste is exempted from REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) (Regulation (EC) No 1907/2006) as it is covered by separate waste management controls. However, once waste has been fully recovered and ceases to be waste, waste management controls cease to apply and REACH may apply instead at that point. Unless specifically exempted (e.g. because a substance has already been registered), producers may need to register substances recovered from waste and placed back on the market and make available appropriate hazard and safety information, for example a suitable safety data sheet.

Further information on REACH is available at the REACH UK Competent Authority website or Helpdesk on 0845 408 9575 or email

1.3 Complying with the Quality Protocol

1.3.1 Tyre-derived rubber materials will normally be regarded as having ceased to be waste, and therefore no longer subject to waste management controls, provided they:

- require no further processing before use, namely;
- have been produced using only those input materials specified in Section 2, namely source-segregated waste tyres;
- meet the requirements of an approved material standard or specification (e.g. PAS 107:2007) (see Section 2);
- meet the requirements of engineering standards if specified for the specific end use (see Section 2);
- meet any additional requirements specified by the customer;
- have been produced using either *ambient* or *cryogenic processing* technologies;
- have been processed to one of the size categories and in accordance with one of the options in Section 2; and
- are destined for use in one of the designated applications within the *designated market sectors* listed in Section 4.

1.3.2 Producers must demonstrate that these criteria have been met. They will do this in the ways set out in Section 3, including by obtaining *certification* from an *approved certification body* and maintaining records.

1.3.3 This Quality Protocol does not apply to whole tyres. It applies to size-reduced tyre-derived rubber materials that are intended for use in *bound* and *unbound* applications.

1.3.4 This Quality Protocol will be adopted as a technical regulation under *Technical Standards and Regulations Directive 98/34/EC* as amended. We recognise that there may be codes of practice or standards which apply in *European Economic Area (EEA)* States other than the UK setting out requirements for the production and use of tyre-derived rubber materials. We accept that tyre-derived rubber materials may cease to be waste provided they have been produced in compliance with:

- a relevant standard or code of practice of a national standards body or equivalent body of any EEA State; or
- any relevant international standard recognised for use in any EEA State; or
- any relevant technical regulation with mandatory or de facto mandatory application for marketing or use in any EEA State.

These must give levels of product performance and protection of human health and the environment which are equivalent to those required in this Quality Protocol.

1.3.5 An outline of the main stages and control mechanisms of the Quality Protocol is presented in Figure 1. These are described further in Sections 2 and 3.

1.4 When Quality Protocol compliant material may become waste

1.4.1 Producers and users of tyre-derived rubber materials should note that, even if the Quality Protocol is complied with, the material will become waste again and subject to waste management controls if it is at any stage:

- disposed of; or
- stored indefinitely with little prospect of being used.

1.4.2 In addition, if Quality Protocol compliant materials are mixed with waste materials the resulting mix will be considered to be a waste and subject to waste management controls. However, if Quality Protocol compliant materials are mixed with other non-waste materials the resulting mix will not, as a result of this, be waste.

1.5 Failure to comply with the Quality Protocol

1.5.1 Where this Quality Protocol is not complied with, for example the tyre-derived rubber materials do not meet an approved material standard or specification, a specified engineering standard or the producer cannot demonstrate evidence of compliance, the tyre-derived rubber materials will normally be considered to be waste. In such circumstances, the producer or user must comply with the appropriate waste management controls for the transportation, storage and use of the tyre-derived rubber materials and may be committing an offence if they do not do so.

1.5.2 Detailed guidance on waste management controls can be obtained from the Environment Agency's National Customer Contact Centre on 08708 506506, from its website [illegible] or NetRegs [illegible].

1.6 Updating the Quality Protocol

1.6.1 We plan to review and update this document every two years from the date of final publication.

1.6.2 However, this document may be subject to change before the review dates. Triggers for change could include:

- pollution incidents;
- a change in the market;
- a change in legislation or case law;
- a shift in the chemical composition or physical properties of waste tyres; and
- more data becoming available on the critical chemical concentrations in waste tyres, such as through REACH analysis undertaken by manufacturers.

1.6.3 This Quality Protocol may be withdrawn by the Environment Agency if it becomes apparent that it is generally being misused and/or misapplied.

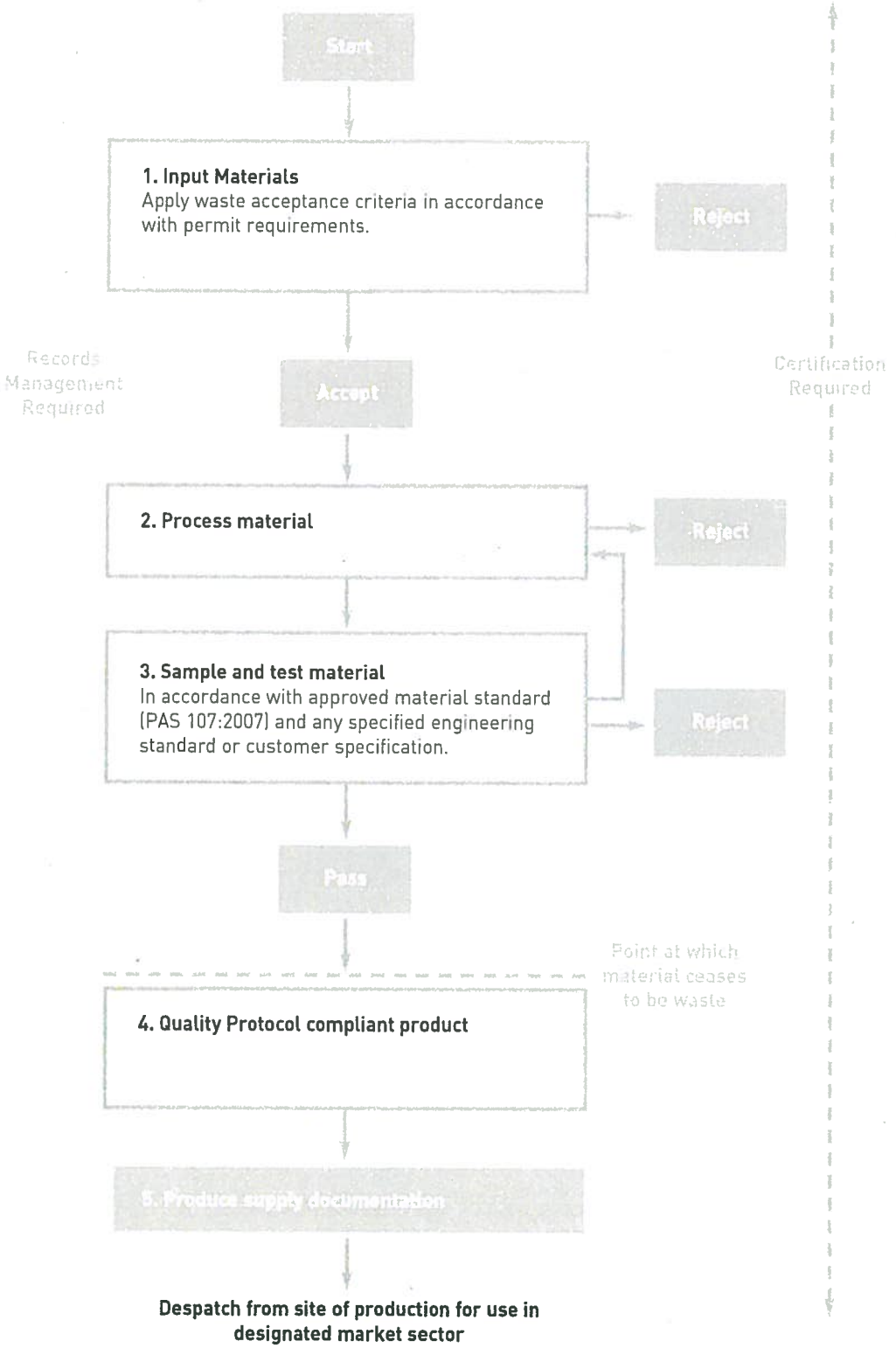
1.7 Importing and exporting Quality Protocol compliant material

1.7.1 Producers intending to export Quality Protocol compliant materials should be aware that, although the material may cease to be waste in England and Wales, the country of destination may take a different view. Under the Waste Shipment Regulation (EC/1013/2006), if the competent authority in the country of destination considers the material to be waste, the controls specified in that Regulation will apply to the shipment.

1.7.2 Producers intending to import Quality Protocol compliant materials to England and Wales should be aware that if the country of dispatch regards the material as waste the controls set out in the Waste Shipment Regulation will apply to the shipment, even though the material may be regarded as having ceased to be waste in England and Wales.

1.7.3 As such it is prudent to check with the competent authority for the country of despatch or destination before importing or exporting tyre-derived rubber materials. A list of the relevant European competent authorities can be found at [illegible]

Figure 1 Main stages and control mechanisms of the Quality Protocol



2. Producing tyre-derived rubber materials from used tyres

2.1 Regulating the production process

2.1.1 The process of turning waste tyres into tyre-derived rubber materials is classified as a waste recovery operation and is subject to the waste management controls in the Waste Framework Directive and domestic legislation. This Quality Protocol does not affect the obligation for producers to hold an environmental permit that authorises the storage and processing of waste tyres and to comply with its conditions.

2.2 Criteria for producing tyre-derived rubber materials that have ceased to be waste

2.2.1 To comply with this Quality Protocol the tyre-derived rubber material must require no further processing before use. To do this the criteria outlined in Sections 2.3 to 2.5 must be met. In addition, the producer must achieve certification as detailed in Section 3 and the material should be destined for use in one or more of the designated applications in the designated market sectors listed in Section 4.

2.3 Input materials

2.3.1 Source-segregated waste tyres classified under *European Waste Catalogue (EWC)* code 16.01.03 end-of-life tyres are the only acceptable input materials. Specifically these are waste tyres that have been removed from road vehicles and off-road vehicles, such as agricultural and earth-moving equipment, but excluding aircraft tyres.

2.3.2 Whilst tyres which contain small amounts of contamination arising from their use or handling, such as earth and stones, or grease and oils are considered to be acceptable inputs, tyres which have been contaminated with foreign matter or contaminants as a result of being fly-tipped or buried are not acceptable inputs.

2.4 Processed in accordance with the approved material standard

2.4.1 Tyre-derived rubber materials can be produced in accordance with this Quality Protocol using either ambient or cryogenic processing technologies.

2.4.2 The producer must comply with all the requirements of an approved material standard. Appendix B lists the only approved material standard at the time of publishing this Quality Protocol (PAS 107:2007). Additional material standards may be approved by the Environment Agency for inclusion to this Quality Protocol when it is reviewed.

2.4.3 The tyre-derived rubber materials resulting from the process must have been processed to, and fall within, one of the size categories stated in Table 2 in order to comply with this Quality Protocol.

2.4.4 Producers should be aware that the approved material standard is subject to regular periodic review and should ensure they comply with the latest revision.

Table 2 – Size categories of tyre-derived rubber materials[1]

[1] With exposed wire and textiles, currently the only suitable application of this material is in landfill engineering as replacement aggregate (see designated market sectors)
[2] Containing less than 5% exposed wire and textiles on visual inspection
[3] No exposed wire and containing less than 5% exposed textiles on visual inspection
[4] Free from exposed wire and textiles

2.5 Meets the requirements of specified engineering standards

2.5.1 The producer should also comply with all the requirements of the specified engineering standard when the intended end use is in either the civil engineering (unbound applications) or landfill engineering market sectors (see Section 4). Appendix C lists engineering standards identified at the time of publishing this Quality Protocol.

2.5.2 Producers should be aware that the engineering standards are subject to regular periodic review and should ensure they comply with the latest revisions.

2.6 Meets any additional customer specification

2.6.1 In addition to the requirements set out in Sections 2.3 to 2.5, a customer may also specify additional requirements for the tyre-derived rubber materials to meet.

[1] Developed from PAS 107:2007 'Table 5 - Characteristics of all size reduced tyre materials'

3. Providing evidence of compliance with the Quality Protocol

3.1 Producers must be able to demonstrate compliance with the requirements of this Quality Protocol.

3.2 Compliance must be demonstrated by obtaining a certificate from an approved certification body and by maintaining records, as described below.

3.3 Some of the specified records may already be required as part of the producer's environmental permit conditions. This Quality Protocol does not affect the obligations on producers to comply with environmental permit conditions.

3.4 Certification

3.4.1 The role of the certification body is outlined in Appendix E.

3.4.2 As part of the certification process, the producer must:
- keep and retain records specified in Section 3.5 for a minimum of four years;
- make them available to the certification body for certification purposes.

3.5 Records management

3.5.1 Records must be kept of incoming wastes intended for the purpose of producing tyre-derived rubber materials. In addition to recording the requirements detailed in PAS 107:2007, it must be noted whether the load was accepted.

3.5.2 Records of all inspections and testing carried out for compliance with PAS 107:2007 and any specified engineering standards should be retained.

3.5.3 Records must be kept of all tyre-derived rubber materials leaving the production site. In addition to recording the requirements detailed in PAS 107:2007, supply documentation must also be kept. This documentation must include the following elements:
- date of supply;
- customer's name, contact details and nature of business;
- producer's name and contact details (including address of processing site);
- details of the designated application for which the material is destined (see Section 4);
- quantity supplied by weight/volume;
- details of certification including certification number; and
- a copy of the *Quality Statement*.

3.5.4 The Quality Statement should contain, as a minimum, the following information:
- the approved material standard to which the tyre-derived rubber materials comply (PAS 107:2007);
- the engineering standard to which the tyre-derived rubber materials supplied comply (if required, see Paragraph 2.5.1);
- a statement that the tyre-derived rubber materials supplied were produced in conformance with this Quality Protocol; and
- information on good practice relating to the storage and use of the tyre-derived rubber materials supplied.

4. Storage and use of tyre-derived rubber materials

4.1 Storage of tyre-derived rubber materials

4.1.1 Tyre-derived rubber materials produced in accordance with this Quality Protocol, which are therefore regarded as having ceased to be waste, may need to be temporarily stored either in an off site storage facility before delivery to the customer or at the customer's premises. The materials will not be waste at that point so waste management controls will not apply.

4.1.2 Producers and users should follow the accepted good practice for the storage of both waste tyres and tyre-derived rubber materials. This good practice guidance is given in Appendix D.

4.1.3 If it appears that the material is being stored indefinitely with no certainty of use, the material will revert to being a waste and waste management controls will apply, as specified in Section 1.4.

4.2 Designated market sectors

4.2.1 To comply with this Quality Protocol, the tyre-derived rubber materials must be destined for use in one of the designated applications (underlined) within the designated market sectors listed below.

4.2.2 In some cases, within these designated applications, example final end uses are noted. These example end uses are not intended to be exhaustive and other similar final end uses may be appropriate. The suitability of other similar end uses should be confirmed with your local Environment Agency office.

Civil engineering (unbound applications)

- as a replacement aggregate in construction of road infrastructure, as roadbed stabiliser, slope stabiliser, drainage fill, culverts, drainage channels, bridge abutments and as an additive for rubberised asphalt (refer to Appendix C: engineering standards); or
- as a loose or bound material in surfacing of footpaths, nature trails, cycle paths, bridleways, roads and railways as ballast (refer to Appendix C: engineering standards).

Civil engineering (bound applications)

- as a replacement aggregate in the construction and building industry, e.g. use in block fabrication; or
- as a bound rubberised product, e.g. wall and floor boarding, street furniture (e.g. seating and signposts) and railway crossing surface matting.

Landfill engineering

- as a replacement aggregate in the construction of landfill sites (e.g. drainage layer) (refer to Appendix C: engineering standards).

Sports, recreation and leisure applications

- as unbound material in sports surfacing, e.g. artificial turf, racecourses, equestrian surfaces and running tracks;
- as unbound material in recreation and safety surfacing, e.g. playground surfaces, nature trails, bridleways, cycle trails; or
- as bound material in safety surface matting, anti-vibration matting, impact protection barriers and street furniture.

Industrial and consumer applications (bound applications)

- automotive (e.g. new and remoulded tyres, mats and moulded parts);
- street furniture and road surface matting (e.g. level crossings);
- rubber matting (e.g. livestock mats and mattresses);
- ingredients in building products (e.g. rubberised tiles and insulation mats; rubberised adhesives and mastics);
- consumer products (e.g. footwear and stationery); or
- carpet underlay.

4.2.3 The Environment Agency and WRAP are aware of the emerging nature of the market in the UK for tyre-derived rubber materials. The application of the Quality Protocol to new market sectors and applications will be reviewed according to the review schedule detailed in Section 1.6.

4.3 Additional requirements for certain unbound applications

Where tyre-derived rubber materials are to be used in unbound loose applications in close proximity to aquatic receptors (including rivers, streams, lakes, ponds and groundwater), the good practice stipulated in Appendix D should be adhered to.

Appendix A: Definitions

In this Quality Protocol, the words and phrases below have the following meanings:

Term	Description
Accreditation	Third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks[3].
Ambient processing	The process of cutting and grinding whole tyres using a mechanical process at room (ambient) temperatures.
Approved certification body	A third party, independent of the producer, that operates to rules agreed with the Environment Agency and is accredited by the United Kingdom Accreditation Service (UKAS). Provides independent certification that the product meets the approved standard and the requirements of the Quality Protocol. The same organisation may also undertake independent verification.
Approved material standard	The standard listed in Appendix B (PAS 107:2007) and any other standard approved by the Environment Agency for inclusion in this Quality Protocol.
Bound	Size-reduced tyre-derived rubber material is held by another material, for example within a resin matrix.
Certification	Process of certifying that the independent verification undertaken was valid and proved that the product met the approved standard and the requirements of the Quality Protocol.
Cryogenic processing	The process of breaking down tyres into rubber crumb at low temperatures using liquid nitrogen.
Designated applications	Collective term for the final use to which tyre-derived rubber material is put within the designated market sectors.
Designated market sector(s)	The sector(s) listed in Section 4 in which this Quality Protocol enables tyre-derived rubber materials to be used.
Engineering standards	The standards listed in Appendix C the requirements of which must be met for material destined for end uses in the civil engineering (unbound applications) and landfill engineering market sectors.
Environment Agency	The Environment Agency is the leading public body for protecting and improving the environment in England and Wales. Its job is to make sure that air, land and water are looked after by everyone in today's society, so that tomorrow's generations inherit a cleaner, healthier world.
Environmental Permit	Environmental permits issued or exemptions registered under the Environmental Permitting (England and Wales) Regulations 2007, which came into force on 6 April 2008, or a position adopted by the Environment Agency in accordance with its guidance on the regulation of low risk activities. From 6 April 2008, the following automatically became environmental permits: ■ PPC permits issued under the Pollution Prevention and Control (England and Wales) Regulations 2000 (as amended); and ■ Waste Management Licences (WMLs) issued under the Environmental Protection Act 1990 (as amended).

[3] EN ISO/IEC 17000, 2004 Conformity assessment. Vocabulary and general principles.

Term	Description
Environmental Permit *continued*	Exemptions from the need for a Waste Management Licence, registered under Regulation 18 and Schedule 3 of the Waste Management Licensing Regulations 1994 (as amended) will now come under schedule 3 of the Environmental Permitting (England and Wales) Regulations 2007.
European Economic Area (EEA)	The EEA States consist of the members of the EU (Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, The Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the UK) together with Iceland, Liechtenstein, Norway and Switzerland. Although the Channel Islands and the Isle of Man are part of the UK, they are not part of the EU and businesses registered there are subject to different licensing legislation.
European Waste Catalogue (EWC)	European Waste Catalogue (EWC 2002 and amendments) – comprehensive list of waste codes and descriptions based on waste source and type.
Producer(s)	The operator(s) undertaking used tyre shredding, crumbing and granulating processes.
Quality Statement	Documentation accompanying each load or consignment of tyre-derived rubber materials supplied.
Technical Standards and Regulations Directive 98/34/EC	Seeks to ensure the transparency of technical regulations and is intended to help avoid the creation of new technical barriers to trade within the European Community.
Tyre-derived rubber materials	For the purposes of this document, tyre-derived rubber material is the size-reduced rubber fraction of used tyres meeting the requirements of this Quality Protocol.
Unbound	Shredded or crumbed material is applied in the form of loose fill.
User(s)	Individuals or organisations that obtain tyre-derived rubber materials from a producer or third party with the intention of using those materials for a designated application.
Waste management controls	Controls under legislation that govern the treatment, handling, containment and storage of waste. For example, in compliance with Article 11 of the Waste Framework Directive the user might need to apply to the Environment Agency for a permit.
Waste tyres	End-of-life tyres that have been removed from road vehicles and off-road vehicles such as agricultural and earthmoving equipment and accompanied by a waste transfer note or delivery note. Excludes used tyres from aircraft. The chain of custody from the point of arising to processing, including via used tyre collectors or retread manufacturers, must be clearly demonstrated.
WRAP (Waste & Resources Action Programme)	WRAP helps individuals, businesses and local authorities to reduce waste and recycle more, making better use of resources and helping to tackle climate change.

Appendix B: Approved material standards and specifications to which this Quality Protocol applies

Ambient processing

British Standards Institution's Publicly Available Specification for the collection, initial storage, production and final storage of size reduced, tyre-derived rubber materials (BSI PAS 107: 2007).

Cryogenic processing

Cryogenic processing is not currently included in any publicly available standard. However, PAS 107 can still be followed for this type of processing. Therefore in order to ensure the tyre-derived rubber material can be considered to be manufactured in accordance with this Quality Protocol, all sections of PAS 107 must be adhered to except those parts of Section 7.3 (production process) which, by their nature, apply only to ambient processing.

Copies of BSI PAS 107: 2007 documentation can be obtained free from:

- WRAP at [illegible] or by phoning 0808 100 2040.

Appendix C: Engineering standards to which this Quality Protocol applies

In the case of material that is destined for use in either the civil engineering (unbound applications) or landfill engineering market sectors, producers of tyre-derived rubber materials should be able to demonstrate compliance with an appropriate engineering standard to ensure that the material is suitable for use in the designated application.

The following standards are considered relevant to applications in the civil engineering (unbound applications) and landfill engineering market sectors listed in Section 4. Producers of tyre-derived rubber materials should note that this list is not intended to be exhaustive and additional relevant standards may exist. Standards may also be published or withdrawn at any time and you must ensure you are using the most up to date version.

Civil engineering applications of tyre-derived rubber materials

Contains detailed quality requirements to be met by aggregates for use in asphalt and other surface treatments.

Contains detailed quality requirements to be met by lightweight aggregates for use in asphalt and other surface treatments.

Contains detailed quality requirements to be met by aggregates for use in unbound and hydraulically bound materials.

Contains detailed quality requirements to be met by unbound aggregate mixtures. Supported by the Quarry Products Association (an information bulletin is available:).

Specifies the properties of aggregates obtained by processing natural or manufactured materials or recycled crushed unbound aggregates for use in construction of railway track.

Landfill engineering applications of tyre-derived rubber materials

Interim guidance for the design and construction of leachate drainage blankets including characterisation of size reduced materials.

Appendix D: Good practice for the storage of tyre-derived rubber materials and use in unbound applications

Good practice for the storage of tyre-derived rubber materials

Good practice for the storage of tyre-derived rubber materials both on site and at an interim location should be followed; these can be found in Annex B of PAS 107.

Additional good practice for interim storage is as follows:

- Processors should retain ownership of all tyre-derived rubber materials stored at any location other than the site of manufacture until such time as the materials are delivered to the customer at the site for their final use.

- Tyre-derived rubber materials should only be stored at an interim location for a maximum of 12 months.

- A maximum of 5,000 tonnes of tyre-derived rubber material should be stored at an interim location.

- Stockpiles of tyre-derived rubber materials may be at risk from fire and spontaneous heating. Additional detailed fire safety guidance is available from the Health and Safety Executive (HSE)[4] and should be followed. Risk of spontaneous heating can be mitigated by, for example:
  - minimising pile size;
  - controlling moisture levels;
  - managing stock to prevent piles being left for long periods;
  - monitoring sub-surface temperature;
  - turning piles at risk of spontaneous heating;
  - minimising external heating e.g. shading from direct sunshine; and
  - controlling ventilation by enclosure if possible.

Good practice for all unbound applications of tyre-derived rubber materials in sensitive environments

The following good practice should be followed:

- The good practice outlined in Pollution Prevention Guideline PPG5[5] relating to works within 10 metres of a main river watercourse or flood defence should be followed.

- Tyre-derived rubber materials should not be used in areas with very high pH (e.g. pH 8 or above) or very low pH (e.g. pH 5 or below) as there is greater potential for metal/organic mobilisation.

- Tyre-derived rubber materials should not be used for high load bearing applications as their ability to leach chemicals increases.

[5] Pollution prevention guideline PPG5 Works and maintenance in or near water. Environment Agency, Scottish Environment Protection Agency (SEPA) and Environment and Heritage Service (Northern Ireland)

Good practice for unbound, sports, recreation and leisure applications of tyre-derived rubber materials in close proximity to aquatic receptors

The following good practice should be followed:

- The good practice outlined in Pollution Prevention Guideline PPG5 relating to works within 10 metres of a main river watercourse or flood defence should be followed.

- Steps should be taken to ensure that no pathway exists for surface water run-off directly into watercourses. If this is not possible and/or a potential pathway is found to exist you should:
  - ensure adequate dilution at the receptor (e.g. fast flowing watercourse);
  - contain any potential leachate and treat in the same manner as sewage; and
  - where practical, contain all loose tyre-derived rubber materials using appropriate barrier methods (e.g. lining, kerbing) to prevent free release into the environment.

- Records should be kept and retained (for the minimum timescale specified in Section 3.2) giving the following details:
  - quantities and batch supplied and/or used;
  - application rates of tyre-derived rubber materials;
  - location of sites where tyre-derived rubber materials have been loosely spread; and
  - date of spreading.

Good practice for unbound civil engineering (unbound applications) of tyre-derived rubber materials

The following good practice should be followed:

- The good practice outlined in Pollution Prevention Guideline PPG5 relating to works within 10 metres of a main river watercourse or flood defence should be followed.

- Steps should be taken to ensure that no pathway exists for surface water run-off directly into watercourses. If this is not possible and a potential pathway is found to exist (e.g. use as replacement aggregate in open surface drainage channels) you should:
  - develop suitable containment mechanisms and/or leachate collection systems; and
  - ensure adequate dilution at the receptor (e.g. fast flowing watercourse).

Appendix E: Role of the certification body

The approved certification body will agree scheme rules with the Environment Agency and obtain *accreditation* on an annual basis from the United Kingdom Accreditation Service (UKAS) to BS EN 45011: 1998 "General requirements for bodies operating certification systems" (or any subsequent amendments).

The certification body must make provision to ensure that:

Waste & Resources Action Programme

November 2009

The Old Academy
21 Horse Fair
Banbury, Oxon
OX16 0AH

Tel: 01295 819 900
Fax: 01295 819 911
E-mail: info@wrap.org.uk
www.wrap.org.uk

Helpline freephone
0808 100 2040

Environment Agency

www.environment-agency.gov.uk
Tel: 08708 506 506
E-mail: enquiries@environment-agency.gov.uk
GEH00307-E-P

recycle

DGMI

Van: DGMI
Verzonden: dinsdag 1 december 2015 11:23
Aan: defra.gsi.gov.uk'; 'hse.gsi.gov.uk'
Onderwerp: entry 50 annex XVII
Bijlagen: NL comments on CACS_40_2015.docx

Attached our contribution to the discussion. We believe that a legal interpretation is basic and in our view the intention of the legislator was to protect the general pubic. The consequence however following that interpretation is high, considering the impact on collecting and processing tyres in the EU. Following the other interpretation (supply to professional users) will indeed avoid the sector coming into problems. We wonder if that could justify to follow such an interpretation.

Basic to the entry is that the procedure article 68.2 was followed, with public consultation and opinions from RAC and SEAC. Lesson form this example is that we should be very reluctant to use that procedure!

NL comments on CACS/40/2015 'Interpretation of entry 50 of Annex XVII to REACH'

A. Interpretation on placing on the market for supply to the general public

In CACS/40/2015 the Commission presents two different interpretations on the market for supply to the general public. According to the first interpretation the restriction does not cover cases of tiles/mats used in public playgrounds and synthetic turf used in artificial sports fields. The second interpretation does cover these cases.

Although synthetic turf used in artificial sports fields as such is not sold to the general public and is only supplied to professional artificial turf installers (argument for the first interpretation), the NL is of the opinion that in this case the second interpretation is more in line with the spirit of the regulation.. The intention of the legislator with entry 50 is to prevent the general public is getting in immediate contact to the in fill material (and not only in the far end in some long supply chain). A supportive element for this reasoning can be found in the 6th paragraph of the entry, with a specific concentration limit to protect children to exposure of PAH's. In our view it seems strange to protect professional suppliers with a low concentration limit, while for the same case the protection of the general public is based on entry 28 with much higher concentration limits. The same argumentation should also be followed for tiles/mats used in public playgrounds. Additionally, the tiles are for sale to the general public in DIY stores.

This second interpretation is also in line with the original intention of the restriction dossier and the aim to reduce the overall exposure to PAHs. More arguments are given in the Commission document. Nevertheless we believe that the commission creates an even more difficult situation when it decides to use an interpretation of the phrase "supplied to the general public" that doesn't comply with the spirit of the definition. The NL believe that it would be more elegant to give industry more time to evaluate the risks of exposure to synthetic turf from recycled car tires and take this evaluation into account during the review of the entry. It would also be helpful to analyze the trends of PAHs In tires in the period before the review of 2017 to come to an informed decision about the feasibility of the restriction for these products.

B. Are synthetic turf and rubber mats/tiles installed in public places 'articles'?

In view of the Netherlands, rubber mats/tiles should be regarded as articles under REACH. We consider the Commission interpretation that rubber tiles/mats (and synthetic turf) that are permanently fixed are considered part of the facility or premises and will not be seen as 'article' incorrect .In our view, these should be treated as articles just likelike any carpet or flooring . Also, it should be noted that such tiles are sold individually to the general public.

For rubber infill the Commission argues that the rubber is present in the form of loose small granules which are comparable to pellets for plastic materials and therefore these granules should be considered mixtures and not articles. However we question this view because:

- In fill material should have a specific form and particle size. The form and size of the infill particles determine the amount of air in the "grass" layer which is important for the cushioning. In the Fifa Quality Concept for football turf, Fifa indicates product identification of in-fill materials based on particle size, particle shape, bulk density and composition. (http://quality.fifa.com/contentassets/78d39a99968f4315ac58a46ff15409eb/fqc-handbook-of-requirements_january-2012.pdf)
- Further, table 12 in the guidance on requirements in articles applies indicative questions to different stages of polymer processing. From this table it is concluded that a polymer pellet is a substance or a mixture. However for infill material questions 6a and 6b should be answered

with " YES" and therefore it could be concluded that infill material is an article. (http://echa.europa.eu/documents/10162/13632/articles_en.pdf)

- In our view, the interpretation of the Commission would be inconsistent with an earlier interpretation that aggregates from construction and demolition waste should be considered as articles (https://echa.europa.eu/documents/10162/13632/waste_recovered_en.pdf).

29.

Van:
Verzonden: dinsdag 1 december 2015 11:02
Aan: @ec.europa.eu'
CC: DGMI; - DGMI; - DGMI; L
Onderwerp: Reaction The Netherlands on CACS-40-2015
Bijlagen: NL comments on CACS_40_2015.docx

Please find attached the comments of the Dutch authorities on document CACS_40_2015. Due to internal miscommunication we are one day late, nevertheless we hope you can take our comments into account.

Greetings,

Ministry of Health, Welfare and Sport
The Netherlands

NL comments on CACS/40/2015 'Interpretation of entry 50 of Annex XVII to REACH'

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- In our view, the interpretation of the Commission would be inconsistent with an earlier interpretation that aggregates from construction and demolition waste should be considered as articles (https://echa.europa.eu/documents/10162/13632/waste_recovered_en.pdf).

29.

Van: @nvwa.nl]
Verzonden: dinsdag 1 december 2015 10:10
Aan: - DGMI
CC:
Onderwerp: RE: Tegels gemaakt van rubbergranulaat van gemalen banden in relatie tot Verordening EU 1272/2013

Kunnen jullie onderstaande interpretatie van VACO t.a.v. de besluitvorming in CARACAL bevestigen, met name ten aanzien van rubbertegels? Is er een verslag van CARACAL waaruit blijkt wat er precies is afgesproken?
Als ik afga op de weergave van VACO zouden rubbertegels, door professionals gelegd onder speeltoestellen, niet vallen onder de Reach-verordening. Dan zouden ze vallen onder de Bouwproductenverordening (CPR). Probleem daarbij is dat er echter nog geen geharmoniseerde norm voor dit soort tegels is, waardoor er momenteel geen regels op deze tegels van toepassing zijn.
Verder begrijp ik dat het de wens is van VACO dat ook de tegels geleverd aan de doe-het-zelf-zaken als constructiemateriaal worden gezien. Hoe zien jullie dat?

En in het algemeen: hoe gaan jullie verder hiermee? Wat bedoelt VACO met ' de visie van de Nederlandse overheid ten aanzien van Verordening EU 1272/2013, gericht aan de Europese Commissie'?

Groet,

Van: @vaco.nl]
Verzonden: maandag 23 november 2015 16:41
Aan: - DGMI';

Onderwerp: Tegels gemaakt van rubbergranulaat van gemalen banden in relatie tot Verordening EU 1272/2013
Urgentie: Hoog

Geachte

Graag danken wij u voor uw bijdrage die er vooralsnog toe geleid heeft dat de Europese Commissie rubbergranulaat van gemalen banden, toegepast als infill in kunstgrasvelden, ziet als mengsel en niet als artikel. Hierdoor valt dit rubbergranulaat niet onder Verordening EU 1272/2013. Het verheugt ons dat geen der lidstaten tegen deze interpretatie van de Europese Commissie bezwaren heeft geuit. Het bericht op de REACH Helpdesk met deze strekking, waarvoor veel dank, dat na afloop van het CARACAL-overleg snel het licht zag heeft tot veel (relatieve) rust bij direct en indirect betrokkenen geleid.

Verder hebben wij begrepen dat de Europese Commissie professioneel aangelegde rubbertegels (van rubbergranulaat van gemalen banden, al of niet in situ gerealiseerd) als onderdeel van een constructie ziet waardoor deze ook buiten Verordening EU 1272/2013 vallen. Ons inziens zouden ook de rubbertegels die b.v. via de doe-het-zelfzaken verkocht worden als een onderdeel van een constructie of gebouw (daktegels, staltegels e.d.) gezien moeten worden. Ter vergelijk: ook betontegels zijn in bouwmarkten te koop waarvan voor eenieder duidelijk is dat deze vast op de bodem worden gelegd (tuintegels, trottoirtegels) of onderdeel zijn van een gebouw (daktegels, galerijtegels). Principieel is er geen verschil in de toepassing van een betontegel of een rubbertegel, beide zijn onderdeel van een constructie of gebouw en dus geen voorwerp. Wij stellen het zeer op prijs indien u dit in uw overwegingen meeneemt.

Met betrekking tot het uiteindelijke doel: het voorkomen/minimaliseren van gezondheidsrisico's, wijzen wij u nogmaals graag op de studies en conclusies, zoals genoemd in onze Position paper van 6 november 2015.

Graag zijn wij bereid om met u van gedachten te wisselen over de wijze waarop de milieukundige en gezondheidskundige aspecten van (infill in) kunstgras en rubbertegels op lange termijn geborgd kunnen worden via de Construction Product Directive en CEN. In dit kader is het relevant dat er in TC 217 van CEN reeds gewerkt wordt aan normstelling voor sportvloeren (waaronder kunstgrassystemen).

Wij stellen het zeer op prijs de visie van de Nederlandse overheid ten aanzien van Verordening EU 1272/2013, gericht aan de Europese Commissie, te ontvangen.

Vanzelfsprekend zijn wij graag bereid nadere informatie te verstrekken.

Met vriendelijke groeten,
Vereniging VACO

T:
F:
M:
E: @kcleiden.nl
W: www.vaco.nl
W: www.bandenenwielen-arbocatalogus.nl

Archimedesweg 31
Postbus 33
2300 AA LEIDEN

30

DGMI

Van:
Verzonden: maandag 30 november 2015 10:21
Aan: DGMI;
CC: DGMI; GMI;
Onderwerp: RE: Voorstel voor reactie rubber infill
Bijlagen: NL comments on CACS_40_2015 v2 (2) JvB.docx

Nog maar een versie....

Van:
Verzonden: vrijdag 27 november 2015 16:35
Aan
CC:
Onderwerp: RE: Voorstel voor reactie rubber infill

Mannen,

Met dank voor de voorzet van bijgaand mijn bijdrage aan de discussie. Je zult zien dat

. De VACO krijgt onze bijdrage ook te zien en ik vind

Maandag verder.

Van: @rivm.nl]
Verzonden: vrijdag 27 november 2015 15:01
Aan:
CC: DGMI; - DGMI; - DGMI

Onderwerp: RE: Voorstel voor reactie rubber infill

Ik heb de commentaren zo goed mogelijk verwerkt en nog wat verder gesleuteld aan vooral de vraag of het een mengsel of artikel is.

senior policy advisor CLP and REACH
RIVM, Centre for Safety of Substances and Products
P.O. Box 1, 3720 BA Bilthoven
The Netherlands
tel. +31-
email: ivm.nl

From: nvws.nl>
To: GMI" · ninienm.nl> @rivm.nl>,
Cc:) - DGMI" , - DGMI" ·
@minvws.n,
Date: 11/27/2015 01:04 PM
Subject: RE: Voorstel voor reactie rubber infill

Hoi,

Ook nog een paar opmerkingen. De belangrijkste is toch wel dat

Van DGMI
Verzonden: vrijdag 27 november 2015 11:29
Aan
CC - DGMI; - DGMI;
Onderwerp: RE: Voorstel voor reactie rubber infill

Dank! Een vraag en een paar tekstsuggesties.

Groet,

Van: rivm.nl]
Verzonden: vrijdag 27 november 2015 9:48
Aan: DGMI
CC:) - DGMI) - DGMI;
Onderwerp: RE: Voorstel voor reactie rubber infill

Hierbij een nulde versie van een mogelijke NL reactie. Ik stuur deze versie nu op omdat ik van 10.00 - 12.30 in overleg zit.

senior policy advisor CLP and REACH
RIVM, Centre for Safety of Substances and Products
P.O. Box 1, 3720 BA Bilthoven
The Netherlands
tel. +31-3(
email: @rivm.nl

From: minienm.nl>
To: @rivm.nl>, enm.nl>,
Cc: ninienm.nl>, Belle minvws.nl>, "
@minvws.nl>
Date: 11/27/2015 09:01 AM
Subject: RE: Voorstel voor reactie rubber infill

Verder eens met je voorstel

Groet,

Van: rivm.nl]
Verzonden: vrijdag 27 november 2015 8:10
Aan: - DGMI
CC: DGMI; DGMI;
Onderwerp: RE: Voorstel voor reactie rubber infill

Allen,

Hoewel ik over het algemeen denk ik dat in dit geval

1. Artikel of mengsel
2, Supply to the general public
3. Huidcontact

De ECHA guidance t.a.v. de verplichtingen voor stoffen in artikelen gaat specifiek in op de vraag of een kaars een artikel of een mengsel is. Het antwoord luidt: een combinatie van beide ;-)

Requirements for substances in articles Version 2 – April 2011

Table 6: Borderline cases of substances/mixtures on carrier materials

Object	**Printer ribbon**	**Wet cleaning wipe**	**Candle**
Function	Bring ink onto paper	Remove dirt from surfaces	Create a flame
Question 4a: If the substance/mixture were to be removed or separated from the object and used independently from it, would the substance/mixture still be capable in principle (though perhaps without convenience or sophistication) of carrying out the function?	**YES**, the ink itself could still fulfil the function of bringing ink onto paper.	**YES**, the cleaning effect could generally be achieved by using the mixture itself though with less convenience.	**NO**, without the wick the mixture would not create a flame.
Question 4b: Does the object act mainly (i.e. according to the function) as a container or carrier for release or controlled delivery of the substance/mixture or its reaction products?	**YES**, the main function is to deliver the ink to the paper.	**NO**, the main function of the object is to remove dirt from surfaces.	**YES**, the wick delivers the mixture in a controlled way the flame.
Question 4c: Is the substance/mixture consumed (i.e. used up e.g. due to a chemical or physical modification) or eliminated (i.e. released from the object) during the use phase of the object, thereby rendering the object	**YES**, when the ribbon is disposed, most of the ink has been consumed.	**YES**, the cleaning agents are predominantly consumed[22] and the wipe is disposed of separately.	**YES**, the mixture is burnt during the use phase of the candle.

useless and leading to the end of its service life?			
Conclusion	combination of an article and a substance/mixture	combination of an article and a substance/mixture	combination of an article an a substance/mixture

If you can answer these questions predominantly with *yes* (i.e. 2 of 3) rather than *no*, then the object should be regarded as a combination of an article (functioning as a container or a carrier material) and a substance/mixture.
It is to be noted that an importer or supplier of such an object is also considered to be an importer or supplier of a substance/mixture. As such he might also have obligations other than those of importers and suppliers of articles described in this guidance document. This means that substances in a container or on a carrier material might e.g. have to be registered, or be supplied with a safety data sheet. **Importers and suppliers of a "combination of an article and a substance/mixture" therefore have to separately check if obligations for the article apply and if obligations for the substance/mixture apply.** Chapters 3 and 4 describe how to identify the obligations for the article; in order to identify the obligations for the substance/mixture (which is on the article's surface or enclosed in it) you are advised to run the Navigator.

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From: minienm.nl>
To:) - DGMI" nm.nl>, "
<mart
Cc: GMI" <
enm.nl>
Date: 11/26/2015 09:29 PM
Subject: RE: Voorstel voor reactie rubber infill

---

zie mijn eerdere reactie zojuist. Betekent enige aanvulling hier.

Voorts zouden we ook kunnen reageren op het 'supply to the general public'. Ik vind het

Graag reactie!

Van:

Verzonden: donderdag 26 november 2015 14:15
Aan: GMI; - DGMI;
Onderwerp: Voorstel voor reactie rubber infill

Goedemiddag heren,

In het kader van "je moet de koe bij de horens vatten" hierbij een voorstel voor een reactie op het Commissie standpunt rondom rubber infill. Ik hoor heel graag wat jullie ervan vinden:

The Netherlands welcomes the position of het Commission that rubber infill should be considered a mixture instead of an article. We see however that this view in our opinion leads to inconsistencies. Agregates from construction and demolition waste for instance should be considered as articles (https://echa.europa.eu/documents/10162/13632/waste_recovered_en.pdf). We have some difficulties with these different points of view and we seriously doubt what a judge would decide after seeing these discrepancies. Furthermore, the guidance also states that "A recovery operator should make sure that the use of a recovered substance is covered by the registration of the original substance". We doubt whether this is the practice in this specific case.

Kort maar krachtig lijkt mij. Maar ik hoor graag op en aanmerkingen.

J

 [attachment "NL comments on CACS_40_2015rev edit deleted by

NL comments on CACS/40/2015 'Interpretation of entry 50 of Annex XVII to REACH'

A. Interpretation on placing on the market for supply to the general public

In CACS/40/2015 the Commission presents two different interpretations on the market for supply to the general public. According to the first interpretation the restriction does not cover cases of tiles/mats used in public playgrounds and synthetic turf used in artificial sports fields. The second interpretation does cover these cases.

Although synthetic turf used in artificial sports fields as such is not sold to the general public and is only supplied to professional artificial turf installers (argument for the first interpretation), the NL is of the opinion that in this case the second interpretation is more correct.~~should be followed because it is t~~ The intention of the legislator with entry 50 is to prevent~~ application that~~ the general public is getting in immediate contact to the in fill material (and not only in the far end in some long supply chain). A supportive element for this reasoning can be found in the 6th paragraph of the entry, with a specific concentration limit to protect children to exposure of PAH's. In our view it seems strange to protect professional suppliers with a low concentration limit, while for the same case the protection of the general public is based on entry 28 with much higher concentration limits. The same argumentation should also be followed for tiles/mats used in public playgrounds. Additionally, the tiles are for sale to the general public in DIY stores.

Met opmaak: Superscript

This second interpretation is also in line with the original intention of the restriction dossier and the aim to reduce the overall exposure to PAHs. More arguments are given in the Commission document.

The NL realizes that above interpretation has a direct and heavy impact on the suppliers of rubber tiles, mats and synthetic turf. This impact is in our view potentially devastating for the sector .Nevertheless we believe that the commission creates an even more difficult situation when it decides to use an interpretation of the phrase "supplied to the general public" that doesn't comply with the spirit of the definition. The NL believe that it would be more elegant to give industry more time to evaluate the risks of exposure to synthetic turf from recycled car tires and take this evaluation into account during the review of the entry. ~~The only reason for the NL to agree with an – in our view – incorrect reading is that the economic consequences are much higher than the actual risks caused by application of this material. In other words: the benefits of restricting do not outweigh the cost.~~

~~Taking into account a review of the entry by December 27, 2017, the NL proposes the COM to further investigate the concentrations and trends in rubber tiles, mats and turf. A study in this direction enables the COM and member states to come to an informed decision in 2017. In this study also the availability of alternatives could be en element for consideration.~~

~~In the meantime this part of entry 50 should be set aside. In case that such an action is not possible, an alternative would be to accept interpretation 1 as a timely way forward in order to prevent damage to this sector.~~

B. Are synthetic turf and rubber mats/tiles installed in public places 'articles'?

In view of the Netherlands, rubber mats/tiles should be regarded as articles under REACH. We consider the Commission interpretation that rubber tiles/mats (and synthetic turf) that are permanently fixed are considered part of the facility or premises and will not be seen as 'article'

incorrect .In our view, these should be treated as articles just likelike any carpet or flooring . Also, it should be noted that such tiles are sold individually to the general public.

For rubber infill the Commission argues that the rubber is present in the form of loose small granules which are comparable to pellets for plastic materials and therefore these granules should be considered mixtures and not articles. However we question this view because:

- In fill material should have a specific form and particle size. The form and size of the infill particles determine the amount of air in the "grass" layer which is important for the cushioning. In the Fifa Quality Concept for football turf, Fifa indicates product identification of in-fill materials based on particle size, particle shape, bulk density and composition. (http://quality.fifa.com/contentassets/78d39a99968f4315ac58a46ff15409eb/fqc-handbook-of-requirements_january-2012.pdf)
- Further, table 12 in the guidance on requirements in articles applies indicative questions to different stages of polymer processing. From this table it is concluded that a polymer pellet is a substance or a mixture. However for infill material questions 6a and 6b should be answered with " YES" and therefore it csh~~h~~ould be concluded that infill material is an article. (http://echa.europa.eu/documents/10162/13632/articles_en.pdf)
- In our view, the interpretation of the Commission would be inconsistent with an earlier interpretation that aggregates from construction and demolition waste should be considered as articles (https://echa.europa.eu/documents/10162/13632/waste_recovered_en.pdf).
- ~~Finally, the guidance also states that "A recovery operator should make sure that the use of a recovered substance is covered by the registration of the original substance". We doubt whether this is the practice in this specific case.~~

Ik zou hier net als boven onder A een stukje aan toe willen voegen dat – om problemen te voorkomen – NL hier tijdelijk een pragmatische oplossing kan steunen.

TER INFORMATIE HIER DE DESBETREFFENDE TABEL (KAN LATER WORDEN WEGGEHAALD)

Gewijzigde veldcode

Gewijzigde veldcode

Opmerking [‹ heb de tekst in de guidance er nu op na geslagen, maar daarin staat ook heel duidelijk dat het alleen een artikel is als de grootte en vorm bepalend is. Als de chemische samenstelling bepalend is dan is het een mengsel volgens de guidance. Vind ik dus geen sterk argument.

Gewijzigde veldcode

Met opmaak: Nederlands (Nederland)

Met opmaak: Nederlands (Nederland)

Met opmaak: Nederlands (Nederland)

Table 12: Applying indicative questions to different stages of polymer processing

Object	Polymer pellet	PE-foils	PE packaging
Question 6a: Does the object have a function other than being further processed?	**NO**.	**YES**, direct application as packaging possible, also without further processing.	**YES**, packaging.
Question 6b: Does the seller place the object on the market and/or is the customer mainly interested in acquiring the object because of its shape/surface/design (and less because of its chemical composition)?	**NO**, the converter selects polymer pellets according to their chemical composition. The shape is not relevant.	**YES**, the buyer of foils is most interested in its shape. For many functions foils of different chemical composition can be used.	**YES**.
Question 6c: When further processed, does the object only undergo only "light processing", i.e. no gross changes in shape?	**NO**, the conversion unit causes the deliberate formation of a shape of the polymer material, which determines its function.	**YES**, further processing doesn't change the design but only modifies it.	Not further processed.
Question 6d: When further processed, does the chemical composition of the object remain the same?	**NO**, before extrusion, additives are mixed into the raw material to obtain certain functionalities.	**YES**, the chemical composition of the foil itself does not change in the further processing steps, but it could be printed onto.	Not further processed.
Conclusion	substance/mixture	article	article

31.

DGMI

Van: ;) - DGMI
Verzonden: donderdag 26 november 2015 21:20
Aan:) - DGMI
Onderwerp: RE: Contact gegevens t.b.v. het verkrijgen van de notulen van het CARACAL overleg 12 en 13 november

Mannen,

Ik had vandaag een vrije dag. Geen vrije avond ;-)

Net als jullie ben ik de mening

Wat is wijs en wat vinden jullie?

Van:
Verzonden: woensdag 25 november 2015 16:02
Aa) - DGMI
CC: DGMI
Onderwerp: RE: Contact gegevens t.b.v. het verkrijgen van de notulen van het CARACAL overleg 12 en 13 november

Dag heren,

Ik heb het hier ook nog een keer besproken (met MT en jurist).

Ik kan morgenochtend noch morgenmiddag helaas.....

Van: @rivm.nl]
Verzonden: dinsdag 24 november 2015 10:26

Aan: ., · DGMI
CC DGMI; I
Onderwerp: RE: Contact gegevens t.b.v. het verkrijgen van de notulen van het CARACAL overleg 12 en 13 november

Beste ,
Eens. Het zit mij ook niet lekker....
Is het een optie om donderdagochtend in Den Haag vroeg even bij elkaar te zitten? (of eind van de middag, maar dan wordt het 17.00)

senior policy advisor CLP and REACH
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From: @minienm.nl>
To: n@rivm.nl>, ivws.nl>, " - DGMI"
Subject: RE: Contact gegevens t.b.v. het verkrijgen van de notulen van het CARACAL overleg 12 en 13 november

Beste

Tijdens CARACAL (closed session) meldde COM ook dat de ERTMA blijkbaar het stuk voor de closed session in bezit had, aangezien ze een reactie daarop ingestuurd hadden (ERTMA position on CACS/40/2015)
Wij kunnen geen CACS documenten verspreiden, dat is nu net het principe achter de closed session.

Overigens had ik gisteren nog een gesprek met waarin de kwestie artikel/mengsel ter sprake kwam.
ij had nog een voorbeeld paraat, namelijk het steengranulaat dat voor wegenbouw wordt gebruikt. Hiervoor is in de REACH guidance bepaald dat het een artikel is (https://echa.europa.eu/documents/10162/13632/waste_recovered_en.pdf p. 23).

Ik ben benieuwd hoe COM dit verder oppakt.

Van: I n@rivm.nl]
Verzonden: dinsdag 24 november 2015 9:54
Aan: DGMI DGMI
Onderwerp: Fw: Contact gegevens t.b.v. het verkrijgen van de notulen van het CARACAL overleg 12 en 13 november

Zie bericht van de alternatieven infill branche. Eigenlijk zouden ze moeten reageren op het Commissie document. Dit is echter een closed session document.

Kunnen we een closed session document verspreiden?
Opvallend is overigens dat de autobandenbranche tijdens het open sessie gedeelte van CARACAL refereerden naar dit closed session document, blijkbaar hebben zij dit wel.

Ik heb ze al eerder verwezen naar de Commissie) maar blijkbaar komen ze daar niet verder in.

senior policy advisor CLP and REACH
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The Netherlands
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----- Forwarded by M 1/24/2015 09:49 AM -----

From: errasportstech.com>
To: < i@rivm.nl>,
Date: 11/23/2015 10.14 AM
Subject: RE: Contact gegevens t.b.v. het verkrijgen van de notulen van het CARACAL overleg 12 en 13 november

Beste

Helaas hebben wij nog steeds geen notulen kunnen bemachtigen en weten we ook niet voor welke datum er een officieel protest ingediend moet worden Brussel. Kunt u ons hierover berichten?

Mag ik u ook vragen naar uw schriftelijk argumentatie, waarop u de publicatie op de Helpdesk heeft gebaseerd?

Wij het nog eens nagekeken en zien geen enkele mogelijkheid om infill als mengsel weer te geven.

Het infill dient een speciale vorm en deeltjes grootte te hebben, om als infill functie te hebben in een systeem. Met name de lucht in de infill laag gecreëerd door de vorm en keuze in deeltjesspreiding bepaalt de functie van het infill materiaal. De chemische samenstelling is veel minder van belang, tevens is die van een recyclingproduct vaak niet eens bekend!
Hierdoor valt infill net als kunstgras onder de definitie Article. U kunt zelf in het Fifa Quality Concept zien welke eisen er aan rubber granulaat als Performance infill gesteld worden. Dit is de juridische kwalificatie, zoals wij die ontvangen hebben.

Daarnaast is er gezien de publieke discussie in de US, waar men langer dan in Europa kunstgras gebruikt een felle discussie gaande aangaande de veiligheid van kunstgrasvelden ingestrooid met gerecyclede/versnipperde autobanden.
Met name door het minimale onderzoek en ontbreken van lange duur blootstelling testen naar o.a. huid, inademen en inname, worden er diverse "onafhankelijke overheids onderzoeken opgestart om hierop een antwoord te hebben"
Deze situatie kan ons inziens geen comfort bieden om de limiet naar PAK's zeer sterk te verhogen voor gerecyclede rubber producten als infill materiaal.

In bijgevoegd document welke ten grondslag ligt aan het amendement welke 27 december in werking gaat treden staan zelfs autobanden als belangrijke PAK's bron vermeld!

Graag zie ik uw reactie tegemoet zodat wij ons schriftelijk protest kunnen indienen.

Met vriendelijke groet / Kind regards,

www.terrasportstech.com
www.tpeinfill.com

Office: +31 Fax: +31 .@terrasportstech.com

Terra Sports Technology BV, Charles Beltjenslaan 8, 6132 AG, Sittard, The Netherlands

---

Van: [mailto rtstech.com]
Verzonden: vrijdag 20 november 2015 14:52
Aan:)rivm.nl'
Onderwerp: Contact gegevens t.b.v. het verkrijgen van de notulen van het CARACAL overleg 12 en 13 november

Geachte heer ,

Hartelijk dank voor uw toelichting zojuist.

Graag zou ik van u de contacten binnen de EU willen ontvangen zodat Terra Sports Technology BV en Softer Group de notulen van het overleg, waaruit u uw conclusie heeft getrokken om een bericht op de helpdesk te plaatsen aangaande de kwalificatie van rubber infill materiaal als Performance Infill in kunstgrasvelden. De term Performance Infill is een kwalificatie van de FIFA en geeft aan dat het infill performance moet leveren in een kunstgrassysteem, d.w.z. een functie heeft in het systeem.

Zoals aangegeven hebben onze bedrijven substantieel geïnvesteerd om producten te ontwikkelen om als infill artikel toegepast te kunnen worden na 27 december. (zie bijlage voor deze verklaring)

Het infill heeft immers een functie in het systeem, er is sprake van huidcontact en wordt ook door (jonge)kinderen gebruikt.

Tevens is er in de Verenigde staten een publiek discussie gaande over de veiligheid van rubber infill granulaat en worden er nu langdurige blootstelling testen aangezet om antwoorden te hebben of het veilig is om op kunstgras ingestrooid met rubber infill afkomstig uit oude banden te sporten. U was hier mee bekend, maar stuur u toch enige links aangaande deze publieke discussie, die u mogelijk nog niet gezien heeft.

http://espn.go.com/espnw/video/14045313/e60-excerpt-turf-war
http://www.nbcnews.com/news/investigations/rubber-mulch-safe-surface-your-childs-playground-n258586
http://www.huffingtonpost.com/2014/12/20/scrap-tires-toxic-playgrounds_n_6356396.html

Ik zie uw antwoord graag tegemoet en wil u bedanken voor de medewerking.

Met vriendelijke groet / Kind regards,

www.terrasportstech.com
www.tpeinfill.com

Office: +31 ell: +31 - Fax: +31) - @ rrasportstech.com

Terra Sports Technology BV, Charles Beltjenslaan 8, 6132 AG, Sittard, The Netherlands

Proclaimer RIVM http://www.rivm.nl/Proclaimer

Proclaimer RIVM http://www.rivm.nl/Proclaimer

Van: @rivm.nl]
Verzonden: dinsdag 24 november 2015 9:54
Aan: - DGMI;
DGMI
Onderwerp: Fw: Contact gegevens t.b.v. het verkrijgen van de notulen van het CARACAL overleg 12 en 13 november
Bijlagen: Polycyclic Aromatic Hydrocarbons why the ban.pdf

Zie bericht van de alternatieven infill branche. Eigenlijk zouden ze moeten reageren op het Commissie document. Dit is echter een closed session document.

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Ik heb ze al eerder verwezen naar de Commissie maar blijkbaar komen ze daar niet verder in.

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email: @rivm.nl

----- Forwarded by /RIVM/NL on 11/24/2015 09:49 AM -----

From: @terrasportstech.com>
To: @rivm.nl>,
Date: 11/23/2015 1[illegible]4 AM
Subject: RE: Contact gegevens t.b.v. het verkrijgen van de notulen van het CARACAL overleg 12 en 13 november

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Met vriendelijke groet / Kind regards,

www.terrasportstech.com
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---

Van: @terrasportstech.com]
Verzonden: vrijdag 20 november 2015 14:52
Aan: @rivm.nl'
Onderwerp: Contact gegevens t.b.v. het verkrijgen van de notulen van het CARACAL overleg 12 en 13 november

Geachte

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http://www.huffingtonpost.com/2014/12/20/scrap-tires-toxic-playgrounds_n_6356396.html

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Met vriendelijke groet / Kind regards,

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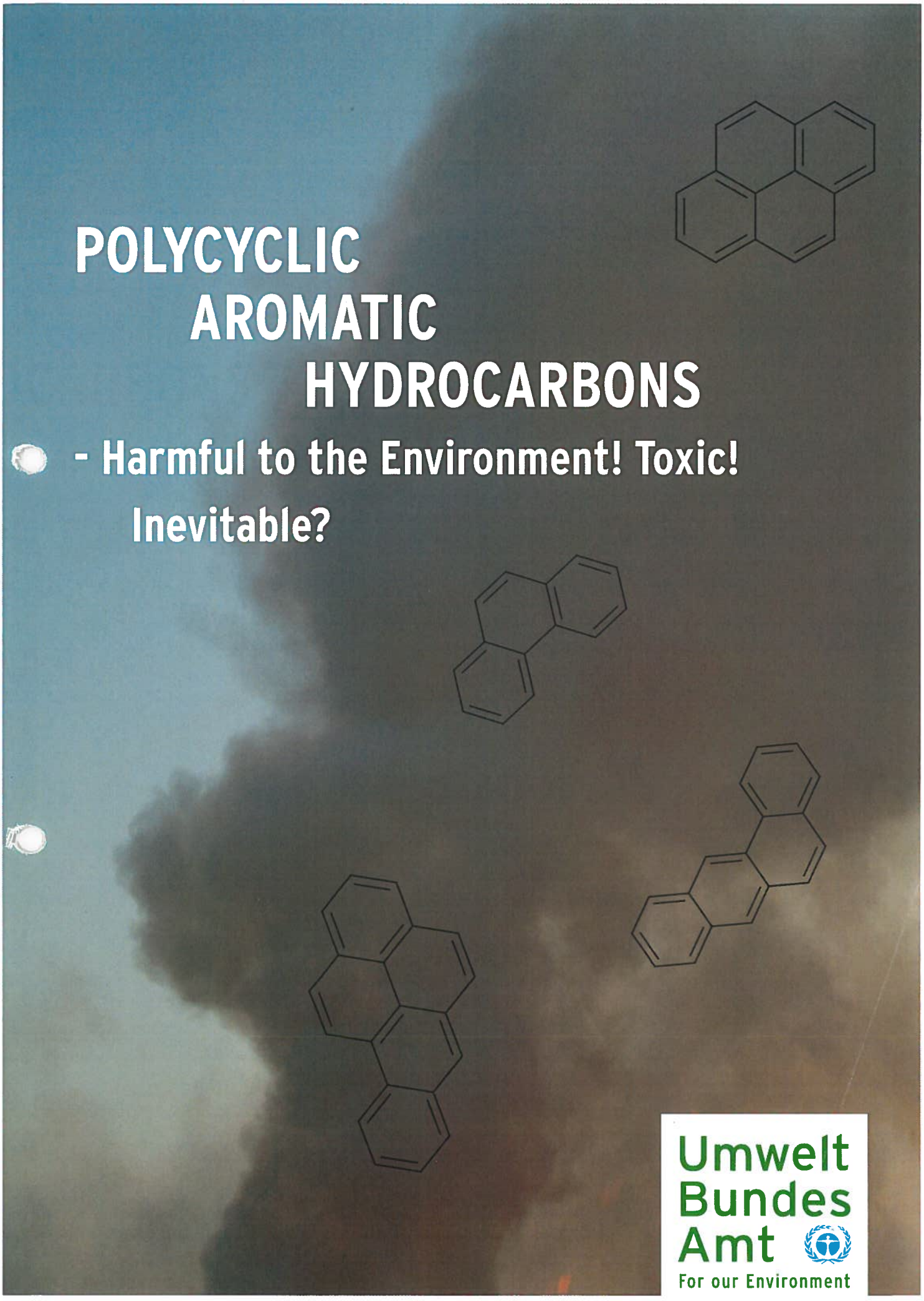
Office: · - Cell: - Fax: - @: @terrasportstech.com

Terra Sports Technology BV, Charles Beltjenslaan 8, 6132 AG, Sittard, The Netherlands



POLYCYCLIC AROMATIC HYDROCARBONS

- Harmful to the Environment! Toxic! Inevitable?

Umwelt Bundes Amt
For our Environment

Imprint

Published by: German Federal Environment Agency
Press Office
Wörlitzer Platz 1, D-06844 Dessau-Roßlau, Germany
E-Mail: pressestelle@uba.de
Internet: www.umweltbundesamt.de

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Design: UBA

Cover photo: © Claudia_Hautumm / Pixelio.de

Background paper

„Polycyclic Aromatic Hydrocarbons: Harmful to the Environment! Toxic! Inevitable?“

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1. POLYCYCLIC AROMATIC HYDROCARBONS – PROBLEM CHEMICALS ?

Whether in mouse pads, toys, or bathing shoes – polycyclic aromatic hydrocarbons (PAHs) are ubiquitous. Most frequently, non-branded products at affordable prices get negative attention in this respect, but products from renowned companies may contain PAHs as well. We encounter PAHs as atmospheric pollutants produced by small combustion units (such as fireplaces and stoves in homes), traffic, industrial processes, and tobacco smoke. They can also be detected in foodstuffs, especially at summertime BBQ events or in smoked products.

What are polycyclic aromatic hydrocarbons and what risk do they represent? Why do we find PAHs time and again in objects of everyday use, and why do we encounter them on a daily basis? What is done to address the problem, and what can each individual do?

The German Federal Environment Agency (UBA) would like to answer these and other questions in this publication.

INFO BOX 1: What are PAHs – the chemistry of a problem group of substances

The group of PAHs includes all compounds that are composed of two to seven rings of carbon and hydrogen atoms (see Figure 1).

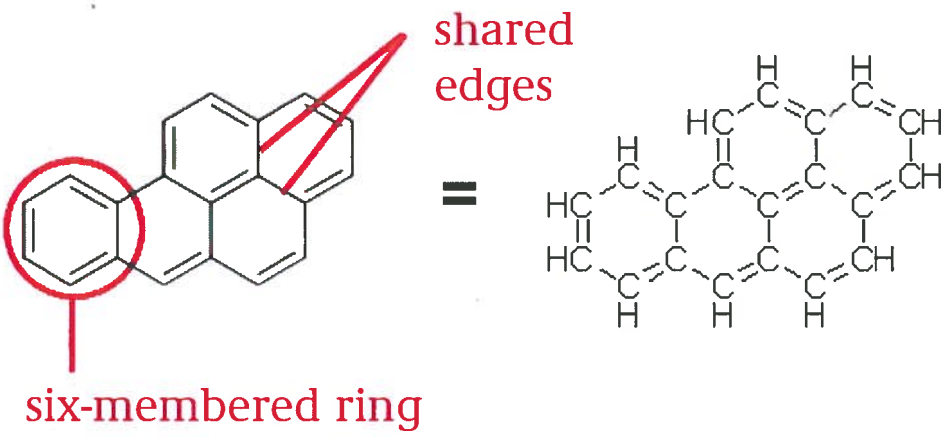

Figure 1: The structure of PAHs, using the example of benzo[a]pyrene (shown on the right with carbon and hydrogen atoms).

Most of these rings consist of six carbon-hydrogen units and are joined along shared edges. The ring system results in a special array of electrons chemists call "aromatic", which is responsible for the special chemical properties of this group of substances. In addition to the variable structure of the ring system, the molecules may carry various side chains instead of hydrogen atoms. This group of substances is therefore very big and includes an estimated 10,000 compounds. The individual compounds often have very similar characteristics. PAHs almost always occur as mixtures due to the way they are generated.

PAHs are solid at room temperature and strongly bind to soot, soil, or dust particles.

The properties of the individual PAHs depend on the number of hydrocarbon rings: PAHs are generally lipophilic, which means they dissolve poorly in water but well in fats and oils. This tendency increases with a growing number of rings, i.e. the more rings are present, the more fat-soluble is the substance and the better it accumulates in the fatty tissue of organisms.

2. WHERE DO PAHs COME FROM ?

PAHs are produced in incomplete combustion of organic matter such as wood, coal, or oil. As a general rule, the lower the temperature of the fire and the less oxygen is available, the more incomplete do these materials burn and the more PAHs are produced. A large portion of the PAHs enters the atmosphere through natural processes that cannot be controlled by humans, such as wood fires or volcano eruptions. Man-made emissions mainly come from combustion processes as well: from small combustion units, industrial processes, fireplaces, or tobacco smoke. In addition, this group of substances is a natural component of fossil raw materials, specifically coal and petroleum. The latter contains between 0.2% and 7% PAHs (National Research Council, 2003). Refining processes[1] such as coking for coal and cracking for petroleum generate products such as coke, tar, petrols, waxes, or oils.

The slags generated in these processes are incinerated or used as a construction material in road building. If PAHs are not removed from slag or from coke oven and refinery products, they will enter the environment due to their persistence. Tar oils and specific oils from petroleum refining can be added as softeners to rubbers and plastics. The largest portion of the PAHs that reach consumers comes from these applications.

3. WHY ARE PAHs SUCH A CONCERN ?

PAHs are an alarming group of substances for humans and environmental organisms. Many PAHs are carcinogenic, mutagenic, and/or toxic for reproduction (Crone and Tolstoy, 2010). Some PAHs are at the same time persistent, bioaccumulative, and toxic for humans and other organisms. Persistent means that the substances remain in the environment for a long time and are hardly decomposed there. Bioaccumulative chemicals accumulate in organisms – including the human body. Substances that combine these three characteristics represent a particular level of concern under an environmental aspect. Experts speak of PBT substances in this context (Persistent, Bioaccumulative, and Toxic substances). If such chemicals are released, they can no longer be removed from the environment due to their characteristics. On the contrary: They accumulate and can harm plants, animals, and ultimately humans.

PAHs bind to dust and soot particles and enter the atmosphere in this way as well. They can be transported over long distances there due to their persistence. The PAH-containing dusts return to the surface of the earth via rain, fog, or snow, are deposited on soil and on plants, and enter surface waters. Since PAHs can be transported to remote areas of the earth, they are also found far away from human sources of entry, such as in remote mountain lakes (Quiroz et al., 2010), in the Arctic and Antarctic regions.

Figure 2: Many PAHs enter the atmosphere through combustion processes and thus spread across wide areas.
Photograph:
© Reinhold Föger / Fotolia.de

Many PAHs always occur as variable mixtures. This is why often "representatives" of a group of substances are determined in chemical analyses. In 1977, the U.S. Environmental Protection Agency (EPA) added 16 PAHs to the list of "priority pollutants" of the U.S. Clean Water Act (nine of which are listed in Table 1). These 16 PAHs were selected because they are highly toxic and easily chemically detectable, include a wide range of potential structures and were frequently found in waters. Chemists mostly measure the sum total of these 16 compounds to determine the PAH content of products. Benzo[a]pyrene serves as the lead compound, which means it is considered representative of all other PAHs. The idea is that PAHs always occur in mixtures: If benzo[a]pyrene is contained in a substance or product, this typically applies to all other PAHs of concern, which have very similar properties. Benzo[a]pyrene was selected because this compound is particularly carcinogenic. However, there has also been criticism of this

1 These processes treat a raw material at high temperatures, pressures under exclusion of air and/or in the presence of catalysts. All these reactions are incomplete since there is no sufficient amount of oxygen. The final products are gaseous and liquid distillation products; coking also produces solid residues that are rich in carbon.

reduction of the problem: For example, the Panel on Contaminants in the Food Chain at the European Food Safety Authority (EFSA) submitted a report on PAHs in foodstuffs in 2008 in which they conclude that benzo[a]pyrene alone is not a suitable marker for the presence of PAHs in foodstuffs. According to EFSA, a combination of four specific PAHs is best suited as an indicator of PAH content in foodstuffs. These are benzo(a)pyrene, benz(a)anthracene, benzo(b)fluoroanthene, and chrysene.

Table 1: Some select PAHs and their properties:

Health hazard!  Environmental hazard!  Warning 

Name (CAS-Nr.)	Melting point in °C	Boiling point in °C	Molecular formula	Hazard designation	Hazard symbol
Benz[a]-anthracene (56-55-3)	160	435	$C_{18}H_{12}$	Hazard: May cause cancer, very toxic to aquatic organisms, with long-term effects	
Benzo[b]-fluoro-anthene (205-99-2)	168	481	$C_{20}H_{12}$	Hazard: May cause cancer, very toxic to aquatic organisms, with long-term effects	
Benzo[j]-fluoro-anthene (205-82-3)	166	480	$C_{20}H_{12}$	Hazard: May cause cancer, very toxic to aquatic organisms, with long-term effects	
Benzo[k]-fluoro-anthene (207-08-9)	217	481	$C_{20}H_{12}$	Hazard: May cause cancer, very toxic to aquatic organisms, with long-term effects	
Benzo[a]-pyrene (50-32-8)	175	495	$C_{20}H_{12}$	Hazard: May cause cancer, may cause genetic defects, impair fertility, and cause harm to the unborn child, very toxic to aquatic organisms, with long-term effects	
Benzo[e]-pyrene (192-97-2)	178	493	$C_{20}H_{12}$	Hazard: May cause cancer, very toxic to aquatic organisms, with long-term effects	
Chrysene (218-01-9)	255	448	$C_{18}H_{12}$	Hazard: May cause cancer, presumably cause genetic defects, very toxic to aquatic organisms, with long-term effects	
Dibenz[a,h]-anthracene (53-70-3)	267	524	$C_{22}H_{14}$	Hazard: May cause cancer, very toxic to aquatic organisms, with long-term effects	
Naphthaline (91-20-3)	80.5	218	$C_{10}H_{8}$	Warning: May presumably cause cancer, harmful if swallowed, very toxic to aquatic organisms, with long-term effects	

4. THE PATH OF PAHs INTO THE ENVIRONMENT AND TO THE CONSUMER

PAHs can enter the environment and reach consumers in manifold ways. Not all paths described here are relevant for the emission situation in Germany because the input of PAHs into the air differs based on a country's level of economic development. The main sources of PAHs in economically less developed countries include domestic combustion of wood, coal, or straw as well as forest and steppe fires. Emissions from coal combustion for power generation are predominant in emerging countries. Air pollution by PAHs in industrialized nations mainly comes from small combustion units in households.

PRODUCTION, TRANSPORT, AND PROCESSING OF PETROLEUM AND COAL

Large quantities of PAHs can be released into the environment by leakages or accidents in the extraction, transport, or refinery of petroleum. The environmental load remains local when oil is spilled into the soil. Entire ecosystems collapse if large quantities of oil are spilled into rivers or lakes, and the load from PAHs contained in petroleum contributes to such collapse. The Niger Delta region in Nigeria, the most populous country in Africa, is a particularly dramatic example. Large international oil companies have operated drilling rigs here since 1958. Environmental experts estimate that about 1.5 million tons of petroleum have inadvertently been released into the environment until 2006 (FME Nigeria et al., 2006). This is equivalent to about 3,000 to 105,000 tons of toxic PAHs. The adverse effects on the nature and humans are dramatic.

Accidental oil spills into the seas also destroy ecosystems in vast areas. In 2010, BP's oil rig Deepwater Horizon exploded in the Gulf of Mexico and caused an oil slick. An estimated 600,000 tons of oil were spilled into the sea (Crone and Tolstoy, 2010). This is equivalent to about 1,200 to 45,000 tons of highly toxic PAHs that will harm the Gulf of Mexico for decades.

In coal mining, PAHs mainly enter the environment through dusts. The material in stock piles and tailings also contains PAHs and pollutes soils, waters and the groundwater.

When coal is processed in coking plants, PAHs can enter the environment through exhaust gases and waste water from processes. The soil and groundwater on the premises of former gas works and coking plants are often highly contaminated with PAHs, especially around tar pits and the areas where coal and waste were stored. Extensive protective measures or an expensive remediation of contaminated sites are required where PAHs pollute the soil and groundwater.

COMBUSTION PROCESSES

The World Health Organization (WHO) most of all considers air pollution (by combustion systems and traffic), smoke from open fireplaces and tobacco smoke risks for humans of coming into contact with PAHs (WHO, 2010).

Figure 3: PAH emissions through combustion
Photograph: ©Bernd-von-Dahlen/ www.pixelio.de

In 2004 alone, 530,000 tons of the 16 EPA PAHs were emitted into the atmosphere worldwide. China has the lead with 114,000 tons, followed by India with 90,000 tons, and the United States with 32,000 tons (Zhang and Tao, 2009).

In 2010, Germany emitted 191.5 tons of the four PAHs benzo[a]pyrene, benzo[b]fluoroanthene, benzo[k]fluoroanthene and indeno[1,2,3-cd] pyrene into the atmosphere[2], approx. 93% of which came from small and medium-size combustion units in households and businesses, roughly 5% from industrial processes, the rest from large combustion plants and traffic (less than 1%).

2 http://www.uba.de/emissionen/publikationen.htm

PAHs FROM INDUSTRIAL SOURCES IN GERMANY

PAHs belong to the reportable substances in the German Pollutant Release and Transfer Register (PRTR). In 2010, a total of 21 operating facilities reported releases of a total of 4,170 kg into the air and 50.4 kg into the water. The table below assigns the reports to the various industries in the PRTR.

Table 2: Analysis of PAH releases in the PRTR (2010 reporting period)

Medium	Industry	Substance	Number	Release [kg p.a.]
Air	Chemical industry	Naphthaline	1	651.0
Air	Energy sector	Naphthaline	1	242.0
Air	Energy sector	PAH	1	514.0
Air	Metal industry	Naphthaline	1	121.0
Air	Metal industry	PAH	1	117.0
Air	Mineral industry	Naphthaline	7	1,441.0
Air	Mineral industry	PAH	1	188.0
Air	Other industries (production of carbon and graphite)	PAH	2	896.0
Water	Waste and wastewater management	Fluoroanthene	3	12.2
Water	Waste and wastewater management	PAH	1	5.4
Water	Energy sector	PAH	1	8.8
Water	Metal industry	PAH	1	24.0

INPUT INTO WATERS

PAHs enter the waters via sewage treatment plants and from many diffuse sources. The Federal Environmental Agency has studied the inputs of PAHs (Fuchs et al., 2010): Emissions into the atmosphere are of the greatest significance. In addition to direct deposits onto water surfaces, substances first deposited onto urban ground are washed into the waters via erosion and surface run-off. More than 80% of the PAH input into waters are thus influenced by atmospheric deposition.

PAHs IN OUR DAILY LIVES

PAHs enter the ambient air through dusts to which they are bound and abrasion from rubber products such as car tyres (see Figure 4).

Figure 4: PAH emissions from traffic. Not only the exhaust gases can be relevant PAH sources but also abrasion from rubber products
Photograph:

It can happen that we inhale them. PAHs are contained, inter alia, in the soot from diesel engine exhaust gases, for example from cars and lorries, but also from diesel locomotives, vessels or large machinery[3]. Tobacco smoke is another significant source of PAHs. Foodstuffs also contain them, for example smoked and barbecued meals, cocoa, and chocolate. Tar oils, petroleum-based extender oils and industrial soots are used to some extent in products made of rubber or soft PVC. Therefore these products also contain PAHs.

They can be absorbed through the skin when these products are used (see Figure 5). At the beginning of the 20th century, drinking water pipes used to be protected against corrosion in some areas by an inside layer of tar, which allowed PAHs to enter the drinking water. This practice has been abandoned in Germany for many decades, and PAH-contaminated drinking water is highly unlikely to be found today. The WHO has advised against the use of such coatings for health reasons for decades, but they are still in extensive use in some countries (WHO, 2011). The EU has defined maximum concentrations of PAH in drinking water (see Section 6).

Figure 5: Hand (slightly creamed with moisturizer) after one-time touching a rubber coated hammer shaft. The spots where PAHs were transmitted due to contact with the rubber fluoresce in UV light. Holes in the coating become visible.
Photograph: TÜV Rheinland Group

The Federal Environment Agency has determined the exposure of the population to PAHs in Germany on a representative scale in environmental surveys (Schulz et al., 2007). These surveys were based on detecting metabolites in the urine. Figure 6 shows a comparison of the findings for the lead substance, 1-hydroxypyrene, from the second (1990/92), third (1998), and fourth environmental surveys (2003/06) in Germany's "old" (Western German) and "new" (Eastern German) federal states. Exposure to PAHs in adults has clearly dropped between 1990 and 1998, especially in the "new" federal states. The major reason should be less contaminated outside air, since PAH emissions were dramatically reduced in the new federal states after the reunification. Figure 6 also shows that children are more exposed to PAHs than adults. This finding can also be shown for other harmful substances; the reason is that children absorb more harmful substances in relation to their body weight than adults do.

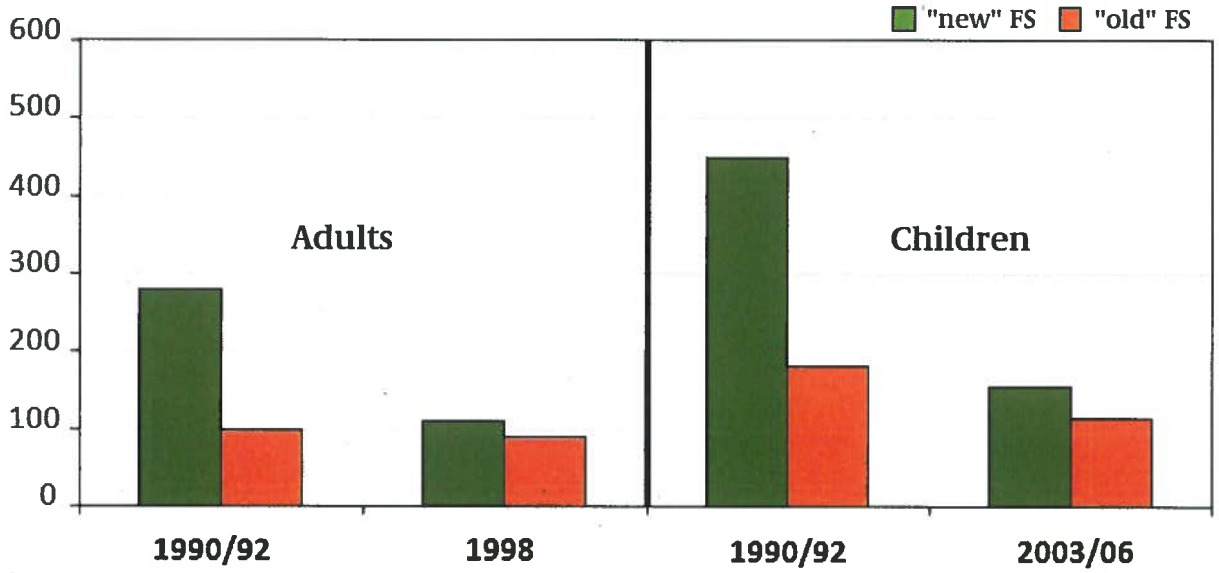

Figure 6: 1-Hydroxypyrene concentration in the urine of adults and children (non-smokers only) in Germany ("new" federal states: dark green bars, "old" federal states: orange). The unit of measurement is nanograms per litre.

3 According to the most recent analysis by the experts at the IARC research centre in Lyon, soot particles from diesel exhaust gases have a carcinogenic effect on humans: http://press.iarc.fr/pr213_E.pdf.

5. WHICH PRODUCTS MAY CONTAIN PAHs?

Figure 7: This hammer shaft is an example of a rubber-containing product
Photograph: © Rainer-Sturm/ www.pixelio.de

PRODUCTS MADE OF RUBBER OR PLASTIC

Independent laboratories keep detecting elevated PAH contents in consumer products. These include tool and bicycle handles (see Figure 7), shoes, or sports items (BfR, 2009); (Umweltbundesamt, 2010); (TÜVRheinland, 2009).

The reason for this is extender oils that are added to the rubber, typically together with fillers, to achieve the desired elasticity. Extender oils are used in some products to make brittle synthetic materials such as PVC soft and flexible. These extender oils, e. g. tar oil, are produced as by-products or waste products in coal and petroleum processing (see Section 2). PAH-containing extender oils are inexpensive and make the products affordable. While extender oils with reduced PAH content and elastic rubber and plastic materials without extender oils are available, these products are often more expensive due to the greater manufacturing effort required. Therefore, it is most of all products from the low-cost and import segments that contain extender oils with PAHs. Items that look like a bargain are in reality often contaminated with harmful substances.

Producers also often use industrial soot to dye plastics black. But regular soot contains PAHs as well. It would often be possible to switch to PAH-free alternatives. Where this is not feasible for technological reasons, producers should use soot with a low PAH content.

Unfortunately, one cannot tell products that contain PAHs by their appearance, and there is also no rapid test for PAH-contaminated products. A strong oil-like odour as known from petrol stations can be a hint. Some products still exude this odour long after they have been purchased.

Table 3 summarizes the PAH concentrations in examples of bathing shoes that UBA had measured in a study (Kalberlah et al., 2011). These concentrations are clearly higher than permitted, for example, by the GS quality mark for tested safety.

Figure 8: Another example of a potentially PAH-containing product are these bathing shoes.
Photograph: © Rainer-Sturm/ www.pixelio.de

Table 3: Measuring results in bathing shoes (Kalberlah et al., 2011)

PAH determination in PVC			
Naphthaline	82 mg/kg	Benzo[a]anthracene	21 mg/kg
Acenaphthylene	<0,1 mg/kg	Chrysene/triphenylene	32 mg/kg
Acenaphthene	<0,1 mg/kg	Benzo[b]fluoroanthene	7,5 mg/kg
Fluorene	170 mg/kg	Benzo[a]pyrene	8,7 mg/kg
Phenanthrene	120 mg/kg	Benzo[j/k]fluoroanthene	4,0 mg/kg
Anthracene	23 mg/kg	Indeno[123-cd]pyrene	3,9 mg/kg
Fluoroanthene	31 mg/kg	Dibenzo[ah]anthracene	1,3 mg/kg
Pyrene	36 mg/kg	Benzo[ghi]perylene	5,9 mg/kg
Total PAHs	**546 mg/kg**		

TYRES

PAH-containing extender oils have been used legally in car tyres until 2009 (see Figure 9). An EU-wide threshold value for PAH-containing extender oils in car tyres has been in effect since January 1, 2010.

Figure 9: The limits for tyres are lower than for children's toys
Photograph: © Rainer-Sturm/ www.pixelio.de

It was introduced by a restriction in the European Chemicals Regulation REACH (Regulation (EC) No. 1907/2006). This restriction bans the use of extender oils for producing car tyres or tyre parts if these contain more than 1 mg/kg of benzo[a]pyrene or if the overall contents of all PAHs listed is more than 10 mg/kg. If the manufactured tyres and tyre treads exceed the specified limits, they may no longer be marketed since the beginning of 2010, which includes re-treaded tyres. However, this restriction does not apply to tyres of bicycles, children's scooters, or Kettcars.

It is the purpose of this regulation to reduce air pollution with PAH-containing dusts produced by abrasion. A test programme of European tyre manufacturers of 2011 has shown that some manufacturers and importers did not comply with the existing legal provisions or check their compliance (European Tyre & Rubber Manufacturers' Association, 2011). Recent checks by the competent state authorities in 2010 and 2011 however did not discover a violation of this regulation in another study[4,5].

RECYCLING PRODUCTS FROM USED TYRES, E.G. SURFACES FOR SPORTS FIELDS

The introduction of strict limits for PAH-containing extender oils in tyres solves the problem of PAHs produced by abrasion in road traffic. But up to 20% of used tyres are recycled. Recycling is actually desirable but it also keeps material produced before 2010 that contains harmful substances and may even contain higher concentrations of PAHs in circulation. For example, used tyres are also processed into floor coverings by mixing the recycled granulate with the individual ingredients. But there have been approval requirements for floor coverings in lounges, corridors, and recreation rooms for several years now, issued by the German Institute for Civil Engineering (DIBt) that exclude such use at least in many indoor spaces or allow it under surface layers made of other materials only. Surfaces of sports fields have been made of recycled granulate for several years. One common design are rubber granulate filled synthetic turf fields. A rubber granulate of recycled material is sprinkled among the 5 cm long synthetic fibres. Studies conducted in the United States (Zhang et al., 2008) have shown that the synthetic turf fields are not resistant to abrasion and that athletically active individuals, especially young people, may be exposed to PAHs via skin contact with abrasions from dusts. In the construction industry, recycled tyres are contained in building protection strips and mats used to protect the waterproofing or as covers of tunnels.

PROTECTIVE COATS, COATINGS AND ADHESIVES

Coal tar pitch that is produced as a waste product in coal processing and has a particularly high PAH content is used in many paints or coatings. These are primarily corrosion protection coats. Many steel structures in industry such as hydraulic equipment, pipework, steel pilings in ports, or vessels are treated with such paints to protect them from water and to prevent rust formation (European Chemicals Agency, 2009). Since regular coal tar pitch is too brittle, hard pitch is used and mixed with tar oils that can be heated to high temperatures and the mixture is then combined into a paint with mineral substances, ash, ground coal or polymers. Use of pitch-containing corrosion protection coatings is on the decline, all the more so since coal tar pitch in paints for vessels or port facilities has been banned throughout Europe (European Chemicals Agency, 2009).

4 http://www.um.baden-wuerttemberg.de/servlet/is/70147/Anlage2_Ergebnisse_Marktueberwachung_2010_-_Bereich_Chemikaliensicherheit.pdf?command=downloadContent&filename=Anlage2_Ergebnisse_Marktueberwachung_2010_-_Bereich_Chemikaliensicherheit.pdf
5 http://www.mulewf.rlp.de/gesundheit/chemikaliensicherheit/pak-in-autoreifen/

Since PAHs are toxic to organisms such as fungi, PAHs are also used as active ingredients in wood preservatives. Creosote, which is obtained from coal tar, is particularly common. As a wood preservative, it is toxic to wood parasites, and it prevents the wood from drying out. Use of woods treated with creosote in gardens, parks, and playgrounds is prohibited. But it may still be used for treating railway sleepers, telephone and power line poles and fences for agricultural purposes (e. g. tree supports, hop and vineyard poles).

PAH emissions from wood treated with creosote can be considerable, especially in hot climatic conditions. The volatile fraction of the tar oils can enter the atmosphere through evaporation or drying of the wood. Railway sleepers treated with creosote also release about one third of the creosote into the environment during their average service life of 26 years, and this substance is not decomposed (Kohler et al., 2000). Used railway sleepers and wood waste treated with creosote should therefore not be used for other purposes and thermally utilized (see below).

Hardwood flooring used to be glued with tar-based adhesives (containing up to 8000 mg of benzo[a] pyrene per kilogramme) into the 1950s. This resulted in increased indoor exposure. Buildings have to be refurbished still today if they include such contaminated wood flooring.

ROAD BUILDING MATERIALS AND ROOF COVERINGS

Bitumen or tar are used as binding agents for the minerals used in road surfaces made of asphalt, pavings, and roof coverings. They serve as an independent protective layer. While bitumen is produced during petroleum refining, tar is obtained in coal processing. Asphalt with PAH-containing tar was produced in the "old" federal states until 1970, in the "new" federal states until 1990. In the meantime, most European countries use bitumen instead of tar because it contains considerably less PAHs. Tar can still be frequently found in old or repaired road surfaces. Tar is also still used in special surfaces, for example, of filling stations or parking lots in the United States. Roofs were frequently sealed with tar from 1970 to 1980 since tar provides good protection against moisture and ultraviolet radiation from the sun due to its chemical properties. The tar boards were also easy to attach and durable. Roof tars are mostly mixtures of pitch and filtered anthracene oil. Tar and tar boards are used in roofing still today, though to a much lesser extent since the carcinogenic effect of PAH-containing tar has become known (European Chemicals Agency, 2009).

COAL BRIQUETTES

Coal briquettes are still used for heating in industry and in residential buildings. Briquettes consist of various PAH-containing types of coal such as coke, peat (not permitted in Europe), or charcoal. Manufacturers typically add binding agents such as tar, pitch, or bitumen to their coal to keep the briquettes in shape. The binding agents themselves contain PAHs and can make up between five and twelve percent by weight of the briquettes. The carcinogenic tars can be substituted by other binding agents such as starch or molasses (European Chemicals Agency, 2009). Use of coal tar pitch is banned in some countries, e. g. in Scandinavia or Germany. Lignite briquettes can be formed in a cold process without binding agents (European Chemicals Agency, 2009).

CLAY PIGEONS

Marksmen use clay pigeons as targets. They must be stable since they are hurled into the air for shooting exercises. At the same time, they are to disintegrate when hit. Clay pigeons are mostly burnt from lime and a binding agent like coal tar pitch. Since this pitch can make up to 30%, clay pigeons are a PAH source as well. According to EWU information by ECHA, about 200 million clay pigeons are produced and used per year. The marksmen typically do not dispose of their clay pigeons after the shooting. They remain in the environment. There is a law in the Netherlands that stipulates specific limits for PAH in clay pigeons. There are also less problematic alternatives in which various types of clay or petroleum pitch are used. But these are comparatively expensive (European Chemicals Agency, 2009).

6. WHAT LEGISLATION IS IN PLACE WITH RESPECT TO PAHs?

There are various regulations that stipulate limitation of PAHs in specific products and in the environment. There are also requirements for specific technical processes aimed at limiting PAH emissions. The purpose of these regulations is to replace PAH-containing products in the long term and to optimize technological combustion processes to protect humans and the environment.

CHEMICALS LEGISLATION (TYRES, WOOD PRESERVATIVES, MIXTURES FOR ULTIMATE CONSUMERS)

The EU REACH regulation contains provisions on the handling of PAHs. According to this regulation it is generally forbidden to sell carcinogens, mutagens and substances toxic to reproduction (CMR substances) to ultimate consumers[6]. This regulation includes the eight PAHs that are already classified as CMR substances. But it only relates to substances or mixtures, such as paints and dyes. Products such as toys or shoes are not affected. Furthermore, creosote and other tar oil-based distillates are banned as wood preservatives. Creosote may not be used at all for indoor woods, for playgrounds, gardens and parks. But there are exceptions: In industrial processes (such as pressure impregnation), creosote may be used for treating railway sleepers, tree supports for agriculture, and vineyard poles[7]. REACH also stipulates limits for PAH-containing extender oils in car tyres[8].

INFO BOX 2: The REACH Regulation (EC) No. 1907/2006

Every day, we come into contact with numerous chemicals: Individual substances (e. g. solvents), mixtures (e. g. varnishes), or products (e. g. textiles). But only for very few of the 130,000 chemicals used in Europe did the public and government authorities have sufficient information about health and environmental effects.

The EU enacted the REACH Regulation on the registration, evaluation, authorization and restriction of chemicals on June 1, 2007 to put an end to this shortcoming. One goal of the regulation is to identify chemicals of very high concern (SVHC), to adequately control and replace them with alternative substances. This is meant to improve the protection of human health and the environment when handling chemical substances.

All chemical manufacturers that produce more than one ton of a substance per year are obliged to submit specific information to the European Chemicals Agency (ECHA) in Helsinki. This includes information on substance properties, utilization processes and impacts on humans and the environment. The same applies to importers of chemical substances who import more than one ton per year. In a reversal of the burden of proof, REACH transfers responsibility for chemical safety from the national authorities who used to be responsible to the manufacturers and importers of substances: They will have to show convincingly that their products can be handled safely and are not unacceptably harmful to the health of users or consumers nor to the environment.

The manufacturers provide information about safe conditions of use in form of the safety data sheet to all their purchasers, the so-called downstream users, in the supply chain. The substances that are considered dangerous or even substances of special concern can be subjected to other regulatory measures besides registration, such as restrictions for specific uses or a general authorization requirement for all uses. Annex XVII of the REACH Regulation already contains a list of chemicals that are subject to restrictions of manufacture, use, or marketing.

6 Entries 28-30 of Annex XVII of the REACH regulation
7 Entry 31 of Annex XVII of the REACH regulation
8 Entry 50 of Annex XVII of the REACH regulation

DIRECTIVES AND REGULATIONS ON PAHs IN ENVIRONMENTAL MEDIA (AIR, SOIL, DRINKING WATER)

European directives and regulations are also aimed at minimizing PAH input into the environmental media air, soil, and water. For example, PAHs are regulated in the protocol on POPs (POP = persistent organic pollutants) for long-range, trans-boundary air pollution and in EU POP regulation (Regulation (EC) No. 850/2004).

To reduce the harmful effects of PAHs in the air, on human health and on the environment, the EU also has determined a target value to be achieved by December 31, 2012 (Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel, and polycyclic aromatic hydrocarbons in the air).

Existing directives are meant to reduce PAH emissions from combustion plants and other industrial installations. The EU Large Combustion Plant Directive 2001/80/EG (2001) stipulates limits for PAHs produced in combustion processes. The German Technical Instruction for Protection of the Air (TA Luft, 2002 version) limits emissions of carcinogens such as benzo[a]pyrene to 0.15 g/h or 0.05 mg/m3. The scope of the regulation on small and medium-sized combustion plants (1.BImSchV) includes stoves and boilers in households. While it does not contain limits for PAHs, it sets limits for other harmful substances that are produced in an incomplete combustion process. Better combustion also reduces PAH emissions.

PAHs IN THE AIR

Benzo[a]pyrene, to which a target value of 1 nanogram/m^3 applies, serves once again as a marker for PAHs in the air. To monitor air quality, the entire territory of Germany is divided into zones and agglomerations in which the benzo[a]pyrene content is measured in PM_{10}[9] at approx. 100 stations (see Figure 10). Incidents of exceeding the target value have been reported to the European Commission since 2008: They occurred at isolated stations (max. 6%) that were located close to road traffic or industrial facilities. The target value was also exceeded in urban areas caused by wood burning in private households. However, Germany is much less contaminated than other European nations: In 2009, 37% of all measuring stations across Europe registered incidents of exceeding the target value, primarily in urban and suburban areas[10].

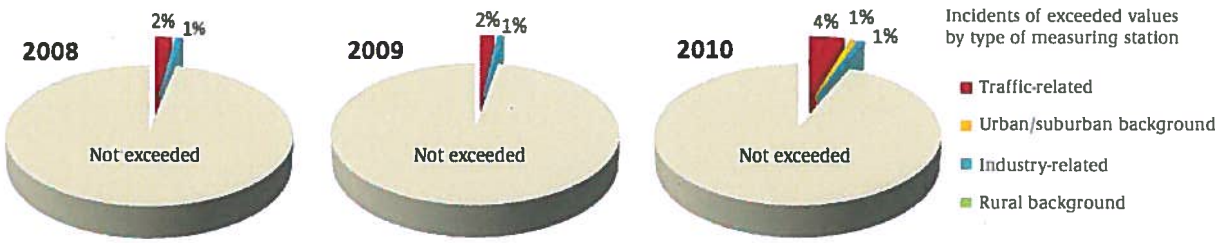

Figure 10: Percentage of air measuring stations in Germany with incidents of exceeding B(a)P.
Note: Since no excess was measured in rural areas, there are no green sectors in the three diagrams.

PAHs IN SOIL AND WATER

The Federal Soil Protection and Contaminated Sites Ordinance (BBodSchV, July 12, 1999) stipulates three values to protect the soil from contamination: Precautionary, test, and action values. The precautionary values are to prevent the occurrence of adverse soil alterations. If test values are exceeded, there are specific indications of an adverse soil alteration. The action values are meant to prevent risks in soils. There are values for the sum total of the 16 PAHs listed by the U.S. EPA and for the individual substances benzo[a] pyrene and naphthaline.

9 PM (particulate matter): Particles that do not immediately drop to the ground but linger in the atmosphere for specific period of time. The fine dust particles are divided into fractions by grain size. PM10 are all dust particles with an aerodynamic diameter smaller than 10 microns.

10 Mol, W.J.A., Hooydonk P.R. van, Leeuw F.A.A.M. de (2011): European exchange of monitoring information and state of the air quality in 2009. ETC/ACC Technical Paper 2011/1. http://acm.eionet.europa.eu/reports/ETCACM_TP_2011_1_EoI_AQ_meta_info2009

The test value of 1 mg/kg of fine soil dry matter (DM) is applicable for benzo[a]pyrene for the soil - crop path of action. The action values for benzo[a]pyrene are 2 mg/kg DM for children's play areas, 4 mg/kg DM for residential areas, 10 mg/kg DM for parks and recreational facilities, and 12 mg/kg DM for industrial and commercial plots of land. Precautionary values for benzo[a]pyrene in soils with a humus content > 8% are 1 mg/kg DM, in soils with < 8% humus content 0.3 mg/kg DM.

Annex X of the EC Water Framework Directive (WFD 2000/60/EC (2000)) lists "priority substances." There are environmental quality standards at European level for 33 priority substances, including eight PAHs. The environmental quality standard for benzo[a]pyrene (annual average) is 0.05 µg/L. In addition, PAHs are classified as "priority substances" for which an extra phasing-out obligation is in place. These substances should no longer be input into the waters of the Community at a point in time to be determined.

There is no limit in Germany for the use of sewage sludge in agriculture. An amendment to the Sewage Sludge Regulation is being prepared that will stipulate a limit for benzo[a]pyrene of one milligram per kilogram of sewage sludge. This value would correspond to the value of the Federal Soil Protection and Contaminated Sites Ordinance.

FOODSTUFFS

The Regulation for Setting Maximum Levels of Certain Contaminants in Foodstuffs" (Regulation (EC) No. 1881/2006) stipulates the highest levels of specific contaminants in foodstuffs. Benzo[a]pyrene, benzo[a] anthracene, benzo[b]fluoroanthene, and chrysene are used as lead substances for PAHs, for the sum total of which limits between one microgram per kilogram for infant formula and follow-on formula and thirty five micrograms per kilogram for smoked mussels have been determined.

The benzo[a]pyrene limit for drinking water set in the Drinking Water Ordinance is 10 nanograms per litre; one nanogram is one millionth of one milligram. Four other, less carcinogenic representatives of PAHs (WHO, 2011) may not exceed 100 nanograms per litre in total in drinking water. The rate of exceeding critical levels was less than one hundredth of a percentage point in Germany from 2005 to 2007 (Umweltbundesamt, 2011).

TOYS

The Toy Safety Directive (2009/48/EC) applies to all toys. Toys may not threaten the safety or health of their users when used as intended and in a foreseeable way, bearing in mind the behaviour of children. This directive expressly prohibits CMR substances above a threshold value. The concentration limits of 100 mg/kg apply to the eight PAHs that are classified as carcinogens. Theoretically, PAHs may be contained in toys at levels below these limits. For benzo[a]pyrene, the limit is thus one hundred times higher than the one for extender oils in car tyres[11]. This is a clear inconsistency in legislation that must be corrected by the EU.

FUELS

The EU Directive on the Quality of Petrol and Diesel Fuels (98/70/EC) stipulates that the PAH concentration may not exceed eight percent by weight in diesel fuels.

COSMETICS

The use of all PAHs with CMR properties in cosmetics is prohibited. This is provided in Article 15 of the Cosmetic Products Regulation (Regulation (EC) No. 1223/2009).

WOOD PRESERVATIVES

The PAH-containing wood preservative creosote is carcinogenic and a substance of concern in the environment because it is persistent, accumulative, and toxic. Studies point to a high risk for organisms when used for woods that are in direct contact with soil or water.

11 http://www.bfr.bund.de/cm/343/polyzyklische_aromatische_kohlenwasserstoffe_pak_in_spielzeug.pdf

Therefore, creosote as a wood preservative (see Section 5 – PROTECTIVE COATS, COATINGS, AND ADHESIVES) is regulated in the REACH Regulation (EC/1907/2006) and the Biocide Regulation. The REACH Regulation prohibits the use of creosote for consumers; use in industrial facilities and for commercial purposes is allowed under certain conditions. It was decided in 2011 to include creosote in the list of active ingredients of biocidal products permitted throughout the EU (Annex I of the Biocide Directive) (Directive 2011/71/EU), but with restrictions: The approval of creosote as a permissible active ingredient of biocidal products throughout the EU is limited to five years, and creosote may only be used in biocidal products where no suitable alternatives are available.

Currently, creosote-containing biocidal products are still on the market without a permit as part of transitional regulations. Each creosote-containing biocidal product has to receive a permit by April 30, 2015; creosote-containing biocidal products without a permit may no longer be marketed as per May 1, 2015. Member states that authorize creosote-containing biocidal products have to justify their decision in a report before the EU Commission by July 2016 and explain, inter alia, how they encourage the development of alternatives. Before the EU-wide approval as an active ingredient is renewed, creosote will be subjected to a comparative assessment with other wood preservatives.

Used wood that has been treated with tar oils as wood preservative has to be classified in Germany as waste wood category A IV in accordance with the Waste Wood Ordinance. It may only be energetically recycled or used to produce synthetic gas, activated carbon, and industrial charcoal; recycling into a wood-based material is excluded.

CONSTRUCTION

Various regulations in construction in Germany address PAHs. For example, there is a directive that regulates the environmentally compatible utilization of tar/pitch-containing finishing materials and the utilization of recycled asphalt in road building (RuVA-StB 01, 2005). Broken-up road surface materials having a PAH-content of less than 25 milligrams/kilogram are called recycled asphalt and can be utilized unbound under a waterproof layer. Recycled asphalt may even be used without meeting special requirements regarding safety, soil, and water protection if it contains less than 10 milligrams of PAH per kilogram. Broken-up road material is to be classified as pitch-containing if it is contaminated with more than 25 milligrams of PAH per kilogram. In this case, stricter requirements apply to utilization and installation methods. Classification as waste requiring special monitoring/harmful waste starts at 1000 milligrams of PAH per kilogram of broken-up road surface.

The "Suggestions for the evaluation of, and measures to reduce, PAH contamination by hardwood floors with tar adhesives in buildings" (DIBt-Mitteilungen, 2000) contain a guideline for evaluating PAHs that are used in tar adhesives for hardwood floors. This guideline also describes how PAH contamination in buildings in which such floors were installed can be reduced by renovation.

Floor coverings that are to be permanently installed in lounges, corridors, and break rooms require building inspectorate approval issued by the German Institute for Civil Engineering and may contain granulate from used tyres in the base layer of the flooring in exceptional cases only. The upper limit for the recycled material is 50 milligrams of PAH per kilogram and 5 milligram of benzo[a]pyrene per kilogram. If the PAH contents in granulate from used tyres decline over time as a result of the EU restriction, it will also be possible to lower the limits for floor coverings. Today, the average PAH content in granulate from used tyres still is about 40 milligrams/kilogram. When a building is demolished, floor coverings made of granulate from used tyres should be disposed of separately to prevent PAH-containing components from mixing with building rubble.

INFO BOX 3: How do you benefit from REACH?

REACH for the first time gives potential buyers an opportunity to obtain information about substances of very high concern (SVHC) in products. You may ask their suppliers, home improvement centres or department stores if PAHs are contained in specific products. These have to answer your question within 45 days – whether you purchase the product or not.

You can find the substances of very high concern (SVHC) on the so-called candidate list. This list is available on the Internet at http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp. It contains one PAH so far (anthracene) and several substances that contain PAHs (five anthracene oils and "pitch, coal tar, high temperature"). This list and the people's right to information helps people to deliberately choose more sustainable alternatives and products without substances of very high concern when they decide to buy or not to buy a product.

In addition, it is the duty of every supplier under REACH to check his or her products for any SVHC in it whenever the candidate list is updated. If the extended list includes new SVHC, a supplier is obliged to actively inform the European Chemicals Agency and his or her commercial customers. Retailers have to inform us all, the ultimate consumers, accordingly upon request. You can ask your question in a fast and simple manner using an online form. All you need is the number under the bar code of the product. Alternatively, you can use the sample letter by the Federal Environmental Agency. Exercise your right.

UBA has posted a form for your online query at http://reach-info.de/verbraucheranfrage.htm and a sample letter at http://www.reach-info.de/svhc.htm.

For more information about the potential uses of SVHC, visit www.reach-info.de.

UBA thinks that companies should already take a more responsible approach and refrain from substances of very high concern or substances with comparable properties.

In addition to the candidate list, REACH provides other regulatory measures that help protect consumers, employees, and the environment from problem chemicals better than before. The approval of substances of very high concern allows their use on application only. Restrictions throughout Europe protect the people from uses of harmful substances that constitute a risk.

7. A GERMAN INITIATIVE: PAH LIMIT FOR ALL CONSUMER PRODUCTS

The EU does not yet have an overall strategy aimed at protecting humans and the environment systematically from PAHs. Currently, there are numerous individual regulations. But there are no EU-set limits for PAH in products of everyday use. The REACH Regulation could merge these individual regulations.

The European Commission can set limits or issue bans of use in products for substances that are carcinogenic, mutagenic, or toxic to reproduction in a very simple procedure. Article 68 (2) of the REACH Regulation stipulates this exclusive right of the European Commission.

To provide better protection for humans and the environment, the Federal Institute for Risk Assessment (BfR), the Federal Agency for Industrial Safety and Occupational Medicine (BAuA), the Federal Environmental Agency (UBA), the Federal Ministry of Consumer Protection, Food and Agriculture (BMELV), and the Federal Ministry of Economics (BMWi) launched an initiative in the summer of 2010 aimed at limiting the PAH content in consumer products throughout Europe. The German authorities propose a binding limit for carcinogenic PAHs in consumer products, whether manufactured in, or imported to, Europe.

The proposal is to restrict the use and marketing of contaminated products such as shoes, sporting goods, and aquatic toys. This applies to products that do not contain more than 0.2 milligrams of PAH per kilogram. The restriction refers to just eight PAHs. If there were a limit for the eight individual substances, the problem of PAH in consumer products would be solved because it would technically demanding and thus not economically viable to remove the eight substances selectively from the PAH mixture (BAuA, 2010)[12].

In June 2011, the European Commission presented its own proposal: Only toys and products for children up to 14 years of age are to be restricted by PAH limits. The proposed upper limit is 1 milligram of PAH per kilogram.

But this proposal does not go far enough for Germany and the other member states. They want a stricter and more comprehensive restriction of PAHs in consumer products to protect the entire population. The Commission has reworked its proposal in the meantime. It now includes most products that were to be regulated according to the German proposal. The legislative process is expected to be completed in 2013.

PAH emissions should be restricted to expose humans and the environment as little as possible to PAHs. Since PAHs are also natural substances and combustion products that cannot be fully controlled, zero exposure cannot be reached. Therefore we will have to deal with this group of substances in the future, and more steps will be necessary. The first applicable regulations represent first steps towards this goal. Binding restriction of PAHs in consumer products throughout Europe, as it is envisaged now, constitutes another important step in the protection of humans and the environment.

12 http://www.reach-clp-helpdesk.de/de/Verfahren/Beschraenkung/Vorschlaege/Deutsche-Vorschlaege-zur-Beschraenkung.html

INFO BOX 4: The precautionary principle in European environmental policy

The precautionary principle is a pillar of environmental policy. Precautionary measures are meant to contribute to the maintenance, protection, and improvement of the quality of the environment.

The declaration of the U.N. Conference on Environment and Development (UNCED) 1992 in Rio de Janeiro explains the precautionary principle in Chapter 35 (3) of Agenda 21:

"In the face of threats of irreversible environmental damage, lack of full scientific understanding should not be an excuse for postponing actions which are justified in their own right. The precautionary approach could provide a basis for policies relating to complex systems that are not yet fully understood and whose consequences of disturbances cannot yet be predicted."

REACH contributes to ensuring a high level of protection for human health and the environment and to making the handling of chemical substances as safe as possible. Unlike in the past, there is no need to provide the ultimate scientific proof that a substance or product is not safe before it can be regulated.

8. WHAT CAN EACH INDIVIDUAL DO?

Humans come into contact with PAHs. For example, through exhaust gases, smoked or sooted foods, or tobacco smoke. Everyone can reduce his or her personal exposure to PAH. When barbecuing, care should be taken that the food to be barbecued is not blackened, that the charcoal is thoroughly glowing, and that the food is not seared. Use of a grilling tray prevents the formation of unnecessary smoke from fat dripping into the fire. Avoiding (active and passive) tobacco smoke is another way besides avoiding PAH-containing products.

Rubber and soft PVC can indicate PAH content by its strong, oil-like odour. Products made of black rubber or plastic may contain untreated PAH-containing industrial soot. Quality symbols such as the GS mark or the Blue Angel provide some guidance. Germany has the GS mark for tested safety. Products made of rubber or plastic have been tested for their PAH content since 2007 as part of the GS testing. Plastics may contain a maximum of 10-200 milligrams of PAH per kilogram or 1-20 milligrams of benzo[a]pyrene per kilogram. A product will be awarded the GS mark only if these conditions are met. Baby toys may not contain any PAHs (TÜV, 2007). However: The GS mark is a voluntary sign. Manufacturers must decide if they wish to apply for the GS mark. If in doubt, avoid skin and mouth contact or use alternative products.

If people are insecure, they can use the new right to information under the REACH Regulation to obtain information about substances of very high concern. But it only applies to substances that are already listed on the candidate list. The only PAHs on this list so far are anthracene and five anthracene-containing oils as well as "pitch, coal tar, high temperature" (as per October, 2012). It is the responsibility of companies to develop strategies aimed at reducing PAHs in products and industrial exhaust gases beyond legal requirements. You can influence the policy of these companies by making informed consumer decisions.

9. SUMMARY

Polycyclic aromatic hydrocarbons (PAH) originate as by-products of incomplete combustion of organic materials, such as wood, petroleum and coal, when these materials are strongly heated in the absence of air. PAHs are also contained in refinery or coking plant products. In chemical terms, PAHs are a diverse group of aromatic substances composed of two to seven hydrocarbon rings. PAHs dissolve well in fats, bind to particles, and accumulate in organisms and the environment.

PAHs enter the environment mainly through the air as a result of industrial and natural thermal processes. Consumers come into contact with PAHs in the form of contaminated rubber or plastic products and abrasion from rubber products, floorings, or wood preservatives. PAHs are absorbed via the air, tobacco smoke, and consumption of specific contaminated foodstuffs, such as smoked foods. Many PAHs are carcinogenic, mutagenic, or toxic for reproduction. Due to their chemical and biological stability and their potential for bioaccumulation, they are persistent in the environment and accumulate in organisms.

There are many individual regulations aimed at limiting the occurrence of PAHs in the environment and in products. For example, limits are in place for PAHs in the air, water, and soil, in foodstuffs and drinking water, for PAHs in tyres and certain wood preservatives, in fuels, toys, and there are some regulations in the construction industry. The environmental quality objectives for PAHs in surface waters are not achieved everywhere in German surface waters. Contaminated soils (abandoned sites) frequently show higher values than the predetermined test values. There are no binding limits for consumer products in general. Meanwhile, consumers who wish to avoid PAH-containing products made of rubber or soft PVC can first and foremost rely on quality marks or independent product tests, which frequently include PAHs.

An initiative of German agencies, including UBA, aims at banning PAHs in consumer products on a European level. Germany proposed a restriction procedure in conjunction with the new REACH Regulation that the EU Commission will address in fast-track proceedings. It envisages a ban of the eight PAHs classified as carcinogenic in products above a concentration of 0.2 milligrams per kilogram.

The Federal Environment Agency is planning further steps aimed at limiting the risks for humans and the environment. This primarily includes the identification of other PAHs as substances of very high concern as defined in the European REACH Regulation. If PAHs are classified as substances of very high concern, all citizens have a right to ask retailers which products contain PAHs and at what levels. They can find out about the concentrations at which these substances are present. In addition, use of PAH-containing substances may be subjected to authorization. This means that only such applications will be permissible that are harmless or for which there is no alternative.

Private households can contribute to the reduction of PAH emissions by operating their wood or coal-fired stoves and boilers low in emissions – information how to do this can be found in the respective operating instructions.

Companies are urged to develop strategies aimed at minimizing PAH content in industrial exhaust gases and products that exceed legal requirements. They are asked to reduce PAH contamination as much as possible.

10. GLOSSARY AND LIST OF ABBREVIATIONS

BAuA: Federal Agency for Industrial Safety and Occupational Medicine (Bundesanstalt für Arbeitsschutz und Arbeitsmedizin)

Restriction: A restriction relates to a specific use of a chemical, e. g. in the case of PAHs the use of PAHs in consumer products above a predetermined concentration. All other uses of the chemical are generally permitted. The restriction of a chemical can be related to its manufacture, use, or introduction to the market, including in mixtures and products. This allows the regulation of chemicals in imported products.

Substances of very high concern (SVHC): To identify a substance as a SVHC, ECHA or a member state of the European Union must prepare a dossier that meets the requirements of Annex XV of the REACH Regulation. This so-called Annex XV dossier lists substance properties (e. g. solubility in water, flammability, degradability, etc.), manufacturing processes, uses, and effects on organisms and assesses the risk for humans and the environment based on this data. If all member states agree on the evaluation of the substance, the chemical is added to the so-called candidate list.

BfC: Federal Chemicals Office (Bundesstelle für Chemikalien)

BfR: Federal Institute for Risk Assessment (Bundesinstitut für Risikobewertung), one of three federal German authorities responsible for REACH, based in Berlin.

CAS-No.: Chemical Abstracts Service Registry Number, an international designation standard for chemical substances

CMR: Carcinogenic, mutagenic or toxic to reproduction

ECHA: European Chemicals Agency based in Helsinki. All information collected about the approximately 100,000 chemicals used in the EU is pooled here.

Product: An object that receives its specific form, surface finish, or shape that determines its function to a greater extent than its chemical composition.

EFSA: European Food Safety Authority. European authority for food safety based in Parma. It is responsible for risk assessment of foods and feedstuffs in the EU.

Exposure: Technical term for contact with, or exposure to, a harmful substance in toxicology

Mixture: Blends, mixtures, or solutions consisting of two or more substances.

GS mark: Quality symbol confirming "tested safety"

Candidate list: A list of chemicals considered substances of very high concern by the EU. Manufacturers and importers are subject to special information obligations to their customers and end users with respect to substances that are on the candidate list.

PRTR: Pollutant Release and Transfer Register. An online register that provides information about harmful substances that are released by large industrial plants in your region. The European PRTR Regulation and the German PRTR Act provide the basis for the PRTR.

SVHC: Substance of very high concern (see this entry)

REACH: Registration, Evaluation and Authorisation of CHemicals. Regulation No. 1907/2006.

PBT: Persistent, bioakkumulative, and toxic

PVC: Polyvinyl chloride, a plastic that is actually hard and brittle. It can be made soft and elastic by adding softeners. Such softeners or extender oils often contain PAHs.

TA-Luft: German Technical Instruction for protection of the air

UBA: German Federal Environment Agency (Umweltbundesamt), one of the three federal authorities responsible for the protection of health and the environment, with headquarters in Dessau-Rosslau

WHO: World Health Organization with headquarters in Geneva/Switzerland

Authorization requirement: all uses of this chemical are banned in the EU unless someone files an application for approval of a specific use and the EU Commission approves it. Use of this substance as an intermediate and its import into the EU as an ingredient of products are still exempt from authorization and therefore do not require approval.

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Van: @vaco.nl]
Verzonden: maandag 23 november 2015 16:41
Aan: DGMI: @vwa.nl';
Onderwerp: Tegels gemaakt van rubbergranulaat van gemalen banden in relatie tot Verordening EU 1272/2013

Urgentie: Hoog

Graag danken wij u voor uw bijdrage die er vooralsnog toe geleid heeft dat de Europese Commissie rubbergranulaat van gemalen banden, toegepast als infill in kunstgrasvelden, ziet als mengsel en niet als artikel. Hierdoor valt dit rubbergranulaat niet onder Verordening EU 1272/2013. Het verheugt ons dat geen der lidstaten tegen deze interpretatie van de Europese Commissie bezwaren heeft geuit. Het bericht op de REACH Helpdesk met deze strekking, waarvoor veel dank, dat na afloop van het CARACAL-overleg snel het licht zag heeft tot veel (relatieve) rust bij direct en indirect betrokkenen geleid.

Verder hebben wij begrepen dat de Europese Commissie professioneel aangelegde rubbertegels (van rubbergranulaat van gemalen banden, al of niet in situ gerealiseerd) als onderdeel van een constructie ziet waardoor deze ook buiten Verordening EU 1272/2013 vallen. Ons inziens zouden ook de rubbertegels die b.v. via de doe-het-zelfzaken verkocht worden als een onderdeel van een constructie of gebouw (daktegels, staltegels e.d.) gezien moeten worden. Ter vergelijk: ook betontegels zijn in bouwmarkten te koop waarvan voor eenieder duidelijk is dat deze vast op de bodem worden gelegd (tuintegels, trottoirtegels) of onderdeel zijn van een gebouw (daktegels, galerijtegels). Principieel is er geen verschil in de toepassing van een betontegel of een rubbertegel, beide zijn onderdeel van een constructie of gebouw en dus geen voorwerp. Wij stellen het zeer op prijs indien u dit in uw overwegingen meeneemt.

Met betrekking tot het uiteindelijke doel: het voorkomen/minimaliseren van gezondheidsrisico's, wijzen wij u nogmaals graag op de studies en conclusies, zoals genoemd in onze Position paper van 6 november 2015.

Graag zijn wij bereid om met u van gedachten te wisselen over de wijze waarop de milieukundige en gezondheidskundige aspecten van (infill in) kunstgras en rubbertegels op lange termijn geborgd kunnen worden via de Construction Product Directive en CEN. In dit kader is het relevant dat er in TC 217 van CEN reeds gewerkt wordt aan normstelling voor sportvloeren (waaronder kunstgrassystemen).

Wij stellen het zeer op prijs de visie van de Nederlandse overheid ten aanzien van Verordening EU 1272/2013, gericht aan de Europese Commissie, te ontvangen.

Vanzelfsprekend zijn wij graag bereid nadere informatie te verstrekken.

Met vriendelijke groeten,
Vereniging VACO

T:
F:
M:
E: kcleiden.nl
W: www.vaco.nl
W: www.bandenenwielen-arbocatalogus.nl

Archimedesweg 31
Postbus 33
2300 AA LEIDEN

Van: · DGMI
Verzonden: maandag 23 november 2015 9:28
Aan: · DGMI
CC: · DGMI
Onderwerp: RE: Rubber infill

Wie bereidt een NL reactie voor en welke elementen nemen we al of niet mee?

Groet,

Van: [mailto: @rivm.nl]
Verzonden: maandag 23 november 2015 7:10
Aan: DGMI
CC: - DGMI; DGMI
Onderwerp: Re: Rubber infill

Het lijkt me goed om een NL reactie op het Commissie document te sturen. Vrijdag twee producenten van alternatief infill aan de lijn gehad; zij zijn van mening dat infill wel een artikel is (incl verwijzingen naar flow charts). Blijft een grensgeval. Ik heb ze door verwezen naar

Delivered to you by RIVM Mobile environment.

From: , DGMI" <! @minienm.nl>
Sent: 21 nov. 2015 16:25
To: @minvws.nl>, ' @rivm.nl>
Cc: ' DGMI" < @minienm.nl>, DGMI" < @minienm.nl>
Subject: Rubber infill

Willen we nog een reactie insturen naar de COM over de interpretatie van entry 50 pak's? Ik ben gebeld door die mij vroeg of NL nog een reactie ging sturen. Mijn antwoord was dat we daar nog geen besluit over hadden genomen.
Vraag 2 is dan voorts wat die reactie zou kunnen inhouden.

35.

Van: ,minez.nl]
Verzonden: dinsdag 17 november 2015 11:15
Aan:
CC:
Onderwerp: RE: voorzet voor instructies CARACAL

Beste

Zijn er in CARACAL afgelopen week nog spannende dingen gebeurd? Ik schuif aanstaande vrijdag aan bij een overleg bij jullie over REACH (met o.a. ook de NRK) en weet niet in hoeverre hieruit terugkoppelen. Kan mij voorstellen dat wij aan de CARACAL-agenda zullen raken nl.

Met vriendelijke groet,

P.s. Heb jij voor mij nog de details voor toegang tot het Extranet?

Van: DGMI @minienm.nl]
Verzonden: dinsdag 10 november 2015 22:47
Aan: - DGMI: DGMI;
DGMI; DGMI
CC: @rivm.nl;
Onderwerp: RE: voorzet voor instructies CARACAL

anderen,

Bijgaand mijn aanvulling voor de instructie CARACAL op het onderdeel 'Entry 50 van Annex XVII', ook wel bekend als 'pak's in rubbergranulaat'. Zie pagina 13 in bijgevoegd document.

Van - DGMI
Verzonden: maandag 9 november 2015 16:49
Aan: DGMI,
DGMI; - DGMI
CC:
Onderwerp: voorzet voor instructies CARACAL

Beste collega's,

Morgenmiddag (14-16u, Oranjebuitensingel 6) is de voorbespreking voor CARACAL, waarvoor ik jullie twee weken geleden een uitnodiging stuurde. Inmiddels zijn (heel) veel documenten door de Commissie online gezet, helaas komen er nog steeds nieuwe bij, maar hierbij alvast een eerste appreciatie en voor het besloten deel (met alleen COM en lidstaten) een instructievoorzet.

Voor de open sessie, waarbij ook de stakeholders aanschuiven, zal de inzet tijdens het vooroverleg bepaald worden.

Voor degenen die niet bij de achterliggende stukken kunnen (ze zijn verkrijgbaar via de Commissie of via RIVM/Extranet!): ik kan stukken ook wel toesturen maar wees met een vraag hierom a.u.b. selectief, er zijn er namelijk tientallen...

En als laatste voor degenen die dit voor het eerst meemaken: de stukken zijn door meerdere mensen gelezen, in de instructie staat een appreciatie van diverse personen (van RIVM, VWS, IenM, NVWA, ILT, etc.). Voor de 'closed session' wordt aan het eind van het agendapunt al een voorzet gedaan voor de NL inzet, voor de open sessie moet dit nog gedaan worden.

Vriendelijke groet,

.....
Directie Veiligheid en Risico's
Ministerie van Infrastructuur en Milieu
Plesmanweg 1-6 | Den Haag
Postbus 20901 | 2500 EX | Den Haag
.....
T 070
E [redacted]ninienm.nl

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.
De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.
The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.

NL instructie tbv CARACAL, onderdeel rubbergranulaat.

14. Guidelines on PAHs and nickel - state of play	Discussion CA/MS/95/2015	11:40 – 11:50

Steun aan het NL paper. Ben benieuwd wat hier uitkomt. Het wordt wel tijd voor duidelijkheid. Voor mij is infill gelijk aan "REACH voorwerp" analoog aan puingranulaat dat in constructie en wegenbouw gebruikt wordt. De chemische samenstelling is ondergeschikt aan vorm en structuur.

paper roept in feite op tot 2 dingen, 1. snelle publicatie van de guidelines en 2. Bezinning bij COM en LS over de wijze waarop deze guidelines impact kunnen hebben op recycling. Beter is om 2. vooraf te laten gaan aan 1. En eens met dat infill voldoet aan de definitie van voorwerp. De vraag is in het paper opgenomen om anderen hierover een mening te laten vormen ☺

De kern van het NL memo is de signalering dat levering van rubbergranulaat na 27/12/2015 strijdig is met de restrictie die dan van kracht wordt. Metingen wijzen uit dat het pak-gehalte in synthetic turf en in rubber tiles boven de toegestane waarde van 1 mg/kg per pak zit. Levering van rubbergranulaat na die datum is onrechtmatig en de gevolgen daarvan zijn door NL in het memo aangestipt. Van belang is om te onderkennen dat het hier niet om een uniek NL probleem gaat. Inzameling en recycling van banden alsmede de toepassingen zijn in een groot aantal Lidstaten hetzelfde. Het niet meer kunnen toepassen leidt enerzijds tot een verwerkingsprobleem terwijl er aan de andere kant zeker op de korte termijn geen voldoende alternatieven beschikbaar zijn.

NL stelt daarom 6 vragen:

1. Wordt dit probleem door andere lidstaten herkend?
2. t/m 4 betreft de uitleg van de wetgeving en de vragen die relevant zijn.
5. Heeft betrekking op de guidance van ECHA,

6. Is de meeste relevante vraag: hoe en wanneer informeren we de sector, andere belanghebbenden, de media en de politiek?

NL is zich ervan bewust dat de COM deze vragen voor beantwoording heeft voorgelegd aan de Europese branche ETRMA. NL vindt dat geen zuivere handelwijze: de uitleg van de wet is bij uitstek een taak van de COM.

Voorts heeft de COM op 9/11 een document gezonden met de interpretatie van paragraaf 5 van entry 50 in annex XVII en de vraag of synthetic turf een artikel is. NL merkt op voorhand op dat deze vragen slechts een deel van het probleem betreffen.

Als het gaat om de interpretatie van paragraaf 5 is NL van mening dat de 2^{e} interpretatie de juiste is. De 1^{e} interpretatie (levering uitsluitend aan professionals) is een te enge benadering die geen recht

DGMI

Van: @rivm.nl]
Verzonden: dinsdag 17 november 2015 8:59
Aan: DGMI
CC: IVM/NL; - DGMI;
Onderwerp: RE: Rubber infill

T.a.v Ik zal de huidige tekst om de website er nog bijpakken omdat we daar ook al verwijzen naar CARACAL (al dan niet in die bewoordingen).

senior policy advisor CLP and REACH
RIVM, Centre for Safety of Substances and Products
P.O. Box 1, 3720 BA Bilthoven
The Netherlands
tel. +31-3
email: rivm.nl

From: nm.nl>
To: " rivm.nl>, " minvws.nl>,
Cc: minienm.nl>
Date: 11/16/2015 10:24 PM
Subject: RE: Rubber infill

Wel de volgende suggesties:

1. CARACAL: weten de lezers wat dat betekent of wie dat zijn? Zou zelf eerder iets neerzetten als: "...tijdens overleg met vertegenwoordigers van de Lidstaten gesuggereerd...". Eventueel ook nog datum bijvoegen, zodat daar geen onduidelijkheid over is: 13 november.
2. Het opnemen van een tekst
3. Heeft het nog zin melding te maken van de ECHA guidance?

PS Intern hebben wij er hier vanmorgen ook over gesproken. Daarbij is mij duidelijk geworden dat

Omdat ik noem, heb ik hem in de CC toegevoegd.

Van: .rivm.nl]
Verzonden: maandag 16 november 2015 15:17
Aan: , - DGMI
CC: [ailgwl02-ext-p.rivm.nl
Onderwerp: Rubber infill

Naar aanleiding van CARACAL zouden we het volgende kunnen melden op de REACH helpdesk:

Wat vinden jullie daarvan?

Ik heb dit al even bij . gecheckt en hij heeft er op deze manier geen bezwaar tegen.

groet

senior policy advisor CLP and REACH
RIVM, Centre for Safety of Substances and Products
P.O. Box 1, 3720 BA Bilthoven
The Netherlands
tel. +31-30
email: @rivm.nl

Proclaimer RIVM http://www.rivm.nl/Proclaimer

Van:) - DGMI
Verzonden: vrijdag 13 november 2015 8:44
Aan:
CC: DGMI; - DGMI;
Onderwerp: RE: aantekeningen closed session

dit maakt de discussie voor mij

Ik zie nu ook duidelijker het verschil tussen 'supply' en 'use' en ik kan

We hebben al een tijd geen dossier meer gemaakt

Van: ...@rivm.nl]
Verzonden: vrijdag 13 november 2015 7:06
Aan: DGMI
CC: DGMI; - DGMI;
Onderwerp: RE: aantekeningen closed session

Ik zal proberen uit te leggen hoe ik er tegenaan kijk en straks zie ik

1. Discussie over "supply to the general public"

Ik begrijp niet goed

Een aantal argumenten pleiten

- Het is de oorspronkelijke intentie van het restrictie dossier

steunt overigens interpretatie 2 en niet 1.
Steun voor interpretatie 1 komt vooral van

Al met al zijn de meningen hier duidelijk over verdeeld. In mijn interventie heb ik argumenten voor beide opties aangegeven

2. Discussie over mengsel/artikel.

Opvallend was dat hier eigenlijk geen discussie over is geweest. Er is een eenduidige conclusie dat infill een mengsel is.

Zelf ben ik

W
d
a

3. Follow up
Prima om vandaag nog met :e praten.
gaf gisteren in de bijeenkomst duidelijk aan dat als iemand zich zorgen maakt over de risico's van deze toepassing, het natuurlijk mogelijk is om een restrictiedossier op te stellen.

NB. Hieronder nog een vraag/opmerking in jouw stuk.

senior policy advisor CLP and REACH
RIVM, Centre for Safety of Substances and Products
P.O. Box 1, 3720 BA Bilthoven
The Netherlands
tel.
email: @rivm.nl

-----) - DGMI" < @minienm.nl> schreef: -----
Aan: - DGMI" minienm.nl>
Van: · DGMI" @minienm.nl>
Datum: 12-11-2015 21:40
cc: @rivm.nl>, DGMI"
@minienm.nl>,) @minvws.nl>
Onderwerp: RE: aantekeningen closed session

Na een eerste reactie heb ik wat tijd gehad om erover na te kunnen denken.

Volgens mij

c

Tevens kondigt de COM aan dat in de tussentijd lidstaten geadviseerd wordt in dit specifieke geval niet handhavend op te treden.

Mochten jullie het er mee eens zijn, dan is het zaak dit morgen vroeg al bij aan te kaarten!

-----Oorspronkelijk bericht-----
Van: - DGMI
Verzonden: donderdag 12 november 2015 15:54
Aan: s) - DGMI
CC: .) - DGMI;

Onderwerp: Re: aantekeningen closed session

Ha

mvg,

Op 12 nov. 2015, om 15:25 heeft - DGMI
< @minienm.nl> het volgende geschreven:

>
>
> Dank voor de terugkoppeling. En laat ik duidelijk zijn:

>

>
>
>
>
>
>
>
> -----Oorspronkelijk bericht-----
> Van:
> Verzonden: donderdag 12 november 2015 13:53

> Aan:
> CC:
> - DGMI
> Onderwerp: aantekeningen closed session
>
> Heren,
>
> Hierbij mijn aantekeningen van de closed session.
> Drie bijzonderheden:
>
> -

> - meerderheid CARACAL lijkt rubber infill te beschouwen als mengsel - en dus is entry 28 van toepassing en niet 50. Dit scheelt enigszins. Ook is entry 50 volgens i.i.g. alleen gericht op verkoop aan professionals. De versie lijkt dit ook te ondersteunen. Commentaar mogelijk tot 30/11.
> -

>
> mvg,
>
>

- DGMI

Van:
Verzonden: donderdag 12 november 2015 13:53
Aan:
CC: DGMI;
DGMI
Onderwerp: aantekeningen closed session
Bijlagen: Verslag CARACAL 19 closed session.docx

Heren,

Hierbij mijn aantekeningen van de closed session.
Drie bijzonderheden:

-
- meerderheid CARACAL lijkt rubber infill te beschouwen als mengsel - en dus is entry 28 van toepassing en niet 50. Dit scheelt enigszins. Ook is entry 50 volgens i.i.g. ileen gericht op verkoop aan professionals. De versie lijkt dit ook te ondersteunen. Commentaar mogelijk tot 30/11.
-
-

mvg,

Rijksinstituut voor Volksgezondheid
en Milieu
*Ministerie van Volksgezondheid,
Welzijn en Sport*

39.

Agenda IVO REACH & CLP

Interdepartementaal Voortgangs Overleg

Datum	donderdag 12 november 2015
Locatie	RIVM, zaal T008
Overlegtijd	10.00 – 13.00 uur

Genodigden: **I&M, VWS, SZW, EZ, Inspecties, Bureau REACH, RIVM**

Nr.	Tijd	Onderwerp	Bijlage(n)	Wie
1.	10.30 uur	**Welkom / mededelingen**		
2.	10.35 uur	**Terug- en vooruitblik**		
3.	10:50 uur	**Rubber infill op CARACAL**		
	11.10 uur	Koffie / thee		
4.	11.20 uur	**REACH - OSH** Update COM activiteiten, rol RIME en uitspraak Europees Hof in VECCO casus		
5.	11.40 uur	**REACH and Beyond** Terugmelding conferentie 20 oktober en vooruitblik		
6.	12.00 uur	**Rondvraag / sluiting**		

Aanvullende bijlage:
Verslag IVO d.d. 17-09-2015

Verslag IVO REACH & CLP

Datum	donderdag 12 november 2015
Tijd	10.00 – 13.00 uur
Locatie	RIVM, zaal T008
Genodigden	RIVM, Inspecties, Ministeries van IenM / SZW / VWS / EZ
Aanwezigen	

NB Alle presentaties worden opgenomen in BRIT!

Data IVO's in 2015:

- 17 december

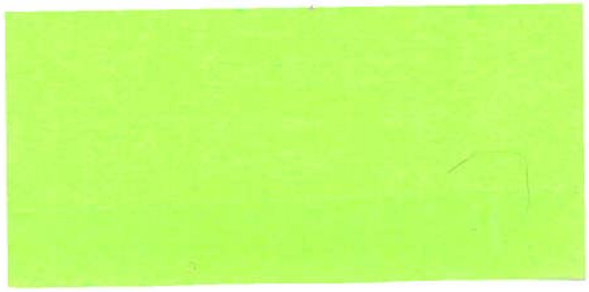
Van het verzoek om de IVO documenten ook in het opmerkingenveld van de agenda-uitnodiging te plaatsen i.v.m. gebruik tablet, evt. met een link naar de mail.

1. **Welkom / mededelingen**
   - wordt welkom geheten, het doel van het overleg wordt toegelicht en er is een voorstelrondje.

2. **Terug- en vooruitblik**
   Zie bijlage
   - meldt nog dat het samenvoegen van de helpdesken voortvarend gaat.
   - VWS werkt met I&M en EZ aan een GreenDeal voor gebruik van lood in de sportvisserij. Doel: alternatieven vooraan in het schap plaatsen.
   - gaat de presentatie van ICL-IP voor selectie van stoffen voor autorisatie of uitfasering mailen. Bijzonder is dat ze hun nek uitsteken om dit te doen. > agenderen voor IVO van 17 december

3. **Rubber infill op CARACAL**
   Zie ook presentatie
   - Groot maatschappelijk recycling risico veroorzaakt door restrictie die begin 2016 van kracht gaat
   - O.a. de herziening in 2017 is dit het moment om op de rem te trappen
   - CARACAL vergadert er deze week over
   - Hoe gaan we hier mee om en hoe communiceren we hierover? Het is opgenomen in de FAQ's van de REACH Helpdesk
   - VWS en I&M pakken het op
   - Hopen dat vandaag de sense of urgency toeslaat
   - Rekening houden met publieke onrust.

Annex XVII entry 50
PAK restrictie



Kort overzicht in 8 dia's

Directie Veiligheid en Risico's

12 november 2015

Annex XVII entry 50
PAK restrictie

"5. Articles shall not be placed on the market for supply to the general public, if any of their rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity, under normal or reasonably foreseeable conditions of use, contain more than 1 mg/kg (0,0001 % by weight of this component) of any of the listed PAHs.

Such articles include amongst others:

— sport equipment such as bicycles, golf clubs, racquets,

— household utensils, trolleys, walking frames,

— tools for domestic use,

— clothing, footwear, gloves and sportswear,

— watch-straps, wrist-bands, masks, head-bands.

6. Toys, including activity toys, and childcare articles, shall not be placed on the market, if any of their rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity, under normal or reasonably foreseeable conditions of use, contain more than 0,5 mg/kg (0,00005 % by weight of this component) of any of the listed PAHs.

7. By way of derogation from paragraphs 5 and 6, these paragraphs shall not apply to articles placed on the market for the first time before 27 December 2015.

8. By 27 December 2017, the Commission shall review the limit values in paragraphs 5 and 6 in the light of new scientific information, including migration of PAHs from the articles referred to therein, and information on alternative raw materials and, if appropriate, modify these paragraphs accordingly."

Annex XVII entry 50
PAK restrictie

Toegestane concentraties in banden:

1mg/kg per pak -> voor 8 pak's totaal 8 mg/kg

Gemeten concentraties:

ELT 2014 6 monsters: gemiddeld 14,2 mg/kg totaal

Nieuwe banden: 4 monsters, gemiddeld 3 mg/kg totaal

Conclusie:

-> toepassing na 27/12 niet meer mogelijk

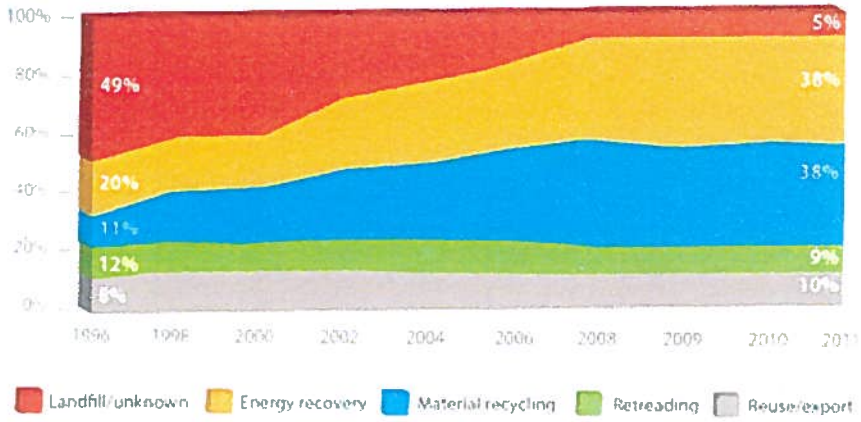
Annex XVII entry 50
PAK restrictie

Toepassingen:

- Rubber granulaat voor kunstgras velden
- Valdempingstegels kinderspeelplaatsen
- Daktegels
- Tegels voor allerlei toepassingen
- Geluid- en schokdemping bij tramrails
- Export
- ....

Annex XVII entry 50
PAK restrictie

- Impact op bandeninzameling?
- Jaarlijks 3,4 miljoen ton banden



- Niet meer leveren heeft gevolgen voor inzameling en verwerking

Annex XVII entry 50
PAK restrictie

- Gezondheidsrisico's laag volgens studies
- Verbranden in een AVI of storten technisch niet acceptabel
- Op korte termijn geen alternatieven als kurk beschikbaar in voldoende hoeveelheid en tegen een redelijke prijs
- Verbranding in cementovens niet ideaal en grote economische impact voor structuur.

Annex XVII entry 50
PAK restrictie

- Vragen aan COM en Lidstaten:

1. Bekend?
2. Is granulaat een artikel?
3. Wordt gebruik op sportvelden en als tegels gezien als levering aan het publiek?
4. Is er sprake van direct, voortdurend of herhaald contact?
5. Wanneer ECHA Guidance?
6. Hoe hier mee om te gaan?

Annex XVII entry 50
PAK restrictie

The floor is yours.....

40.

Van: @etrma.org namens - ETRMA [@etrma.org]
Verzonden: donderdag 12 november 2015 8:27
Aan:
CC: DGMI; '
@me.com;
.. - ETRMA'; technical@etrma.org
Onderwerp: RE: Caracal 12 13 november - PAH restriction consequences for recycled tyres
Bijlagen: 21 - CACS_40_2015_PAH_Interpretation_Entry_50_Annex_XVII.DOCX; 20151110 _ETRMA Position _CARACALCACS-40-2015_.pdf

, following the presentation of the interpretation paper by the Commission on Monday 9/11, ETRMA has sent the attached communication to the European Commission.
Hope we can count on the support of CEFIC, too.

At the meeting, ETRMA wil be represented by

Thank you in advance for your support and your availability –as expressed last week.

Looking forwrad to a good discussion and hopefully positive direction at Caracal on Friday.

Best regards

ETRMA - European Tyre & Rubber Manufacturers Association
Avenue des Arts 2 box 12, B1210 Brussels (Belgium)
tel:
http://www.etrma.org
Register of interest representatives: 6025320863-10

From: [mailto: @cefic.be]
Sent: lundi 2 novembre 2015 11:53
To: - ETRMA (European Tyre & Rubber manufacturers' association)
Cc: DGMI';
Cinaralp .@me.com> (@me.com)
Subject: RE: Caracal 12 13 november - PAH restriction consequences for recycled tyres

Dear all,

It is indeed only as an information point, meaning that a document will be distributed but without discussion, unless a Member State has been explicitly asking the Commission to discuss this.

Best regards

Cefic European Chemical Industry Council
4, Avenue E van Nieuwenhuyse
B-1160 Brussels
Tel:
Mob:
Fax:
E-mail: @cefic.be
Website: www.cefic.org

EUROPEAN COMMISSION
Directorate-General for Environment
Green Economy
Chemicals

Directorate-General for Internal Market, Industry, Entrepreneurship and SME's
Consumer, Environmental and Health Technologies
REACH
Chemicals

Brussels, 09/11/2015
Doc. **CACS/40/2015**

19th Meeting of Competent Authorities for REACH and CLP (CARACAL)

CA Session

12 – 13 November 2015

Room Robert Schuman, BERLAYMONT

Brussels

Concerns: **Interpretation of entry 50 of Annex XVII to REACH**

Agenda Point: **6.3**

Action Requested: **The REACH and CLP Competent Authorities are invited to take note of this document for discussion**

Interpretation of entry 50 of Annex XVII to REACH

As a consequence of on-going work by ECHA on the development of guidelines for the application of the restriction on PAHs in consumer articles, contained in paragraph 5 of entry 50 of Annex XVII to REACH, two possible interpretations of "placing on the market for supply to the general public" have emerged.

This paper describes the two interpretations and Member States are asked to indicate which they consider best describes the intention of the text that they voted on. Clarification of the meaning of this phrase is urgent both because the new PAH restriction applies from 27 December 2015 and because the phrase is used in other restrictions, which might be affected by the interpretation given to this terminology in this entry.

In addition, the Netherlands and the European Tyre and Rubber Manufacturers Association (ETRMA) have expressed concerns as to whether synthetic turf, and rubber mats and tiles produced from synthetic rubber, fall witin the scope of the restriction. These concerns raise the question whether these products are articles or integral parts of structures, or indeed mixtures. This paper also addresses these issues.

A. Interpretations of paragraph 5 of entry 50 of Annex XVII

Paragraph 5 of entry 50 of Annex XVII states:

*"Articles shall not be **placed on the market for supply to the general public** if any of their rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity, under normal or reasonably foreseeable conditions of use, contain more than 1 mg/kg (0,0001% by weight of this component) of any of the listed PAHs." (emphasis added)*

INTERPRETATION 1

The restriction on placing on the market for supply to the general public does not cover cases where tiles/mats used in public playgrounds and synthetic turf used on artificial sports fields, both made from recycled tyres, are merely made accessible (and not sold) to the public.

The legal basis of Commission Regulation (EU) No 1272/2013 amending Annex XVII as regards PAHs is Article 68(2) of REACH. Therefore the overall aim of the amendment, which adds paragraphs 5 to 8 to entry 50, is to restrict the presence of PAHs in articles that could be used by consumers. This is reflected in Recital (6). As it would be impossible to enforce a restriction on the use by consumers of articles containing PAHs above a certain concentration, Regulation (EU) No 1272/2013 restricts the placing on the market of such articles.

"Placing on the market" is defined in Article 2(12) of REACH as "supplying or making available, whether in return for payment or free of charge, to a third party". The addition of the words "for supply to the general public" in paragraph 5 of entry 50 is intended to describe more precisely the activity that is intended to be caught by this particular restriction. Thus,

for the purposes of this restriction, the activity restricted is the supply of articles containing PAHs to the general public or, put simply, the sale of articles containing PAHs to consumers.

Regulation (EU) No 1272/2013 could have restricted another activity – the placing on the market of articles likely to be used by the general public. This would have prevented sales by one actor in the supply chain to another of articles containing more than the permitted concentration of PAHs where it is reasonably foreseeable that the article would be used by members of the general public. Indeed, this approach was initially proposed by DE (see below the wording suggested in the Annex XV dossier) but was subsequently changed to the current text of paragraph 5.

> *"Articles which could be used by consumers (including articles in contact with the oral mucosa, toys, and childcare articles) shall not be placed on the market, if they contain any of the PAHs listed in column 1 at levels above the limit of quantitation (LOQ)".*

In support of this interpretation, Recital (3) of Regulation (EU) No 1272/2013 states that entry 28 of Annex XVII **bans the sale** of PAHs on their own or in mixtures to the general public. Entry 28 also uses the phrase "placed on the market . . . for supply to the general public". It is, therefore, clear from the Recitals of Regulation (EU) No 1272/2013 that the intention of the Regulation is to provide the same protection for the public from risks posed by articles as entry 28 already provides in relation to substances and mixtures.

The wording of paragraph 5 of entry 50 was extensively discussed in several meetings of the REACH Committee, as reflected in the respective minutes, and the intention is particularly clear in the approved minutes of the meeting of 22-23 February 2013, where it is stated that "*SE proposed to replace the whole term by 'foreseen to be used by general public'. COM indicated that changing the wording would entail the risk to include many professional and even industrial products, which would not be proportionate in the context of a measure the main target of which are consumers (general public).*"

Interpretation 2 set out below would introduce uncertainty in many sectors of manufacturing and the integration of articles in industrial or professional contexts, even where such articles were ultimately used by consumers only occasionally or incidentally. Examples of this include:

- Rubber elements in the handrails of escalators, lifts and other parts of public buildings etc. These elements are manufactured industrially and are installed by professionals. However incidental exposure of consumers using these facilities and premises is possible.
- Plastic or rubber elements in the seats and other parts of trains, aircraft, ships, etc. used by the public. Manufacture and assembly is industrial but occasional use by consumers may lead to exposure to PAHs.

None of these examples seem to have been the objective of the restriction voted on in the REACH Committee. It is recognised that under interpretation 1, articles sold to professionals and intended for subsequent use by consumers would be excluded from the restriction, for example bed linen, furniture and appliances supplied to hotels, restaurants, schools and so on.

However, in practice, any risk to consumer health would be limited because manufacturers of such articles generally use the same production lines and processes for the manufacture of articles that will be supplied to professionals (and could then be used by consumers) and articles intended for sale to consumers.

Of course, any case that is not covered by the restriction as construed in accordance with interpretation 1 which might realistically lead to consumer exposure equivalent to that from articles sold directly to consumers can be addressed by new restrictions. In that event, Member States considering that there are risks that need to be addressed are encouraged to come forward with proposals.

INTERPRETATION 2

The restriction on placing on the market for supply to the general public covers the supply of tiles/mats used on public playgrounds and synthetic turf used on artificial sports fields, both made from recycled tyres.

Arguments supporting this option are the following:

1.- Purpose of the restriction: protection of the general public

The purpose of a restriction is to avoid exposure to a substance of the people (or the environment) by following the conditions specified in the restriction. Therefore its terms should be analysed within that purpose.

A restriction "for placing on the market for supplying to the general public" intends to avoid that the 'general public' is exposed to a particular substance by means of banning the 'placing on the market' of an item to be supplied to them. Therefore the terms of the restriction should be interpreted in a way ensuring that the placing on the market for supply to the general public which leads to an exposure of the substance to that general public is precluded.

2. Analysis of the terms of the restriction: "placing on the market for supplying to the general public"

Article 3(12) REACH defines 'placing on the market' as "*supplying or making available, whether in return for payment or free of charge, to a third party. Import shall be deemed to be placing on the market*".

Where a definition is not given in the legislation, it should be attended to the general meaning of the terms. In this sense:

- *'To Supply'* is defined as "*Make (something needed or wanted) available to someone; provide*"[1].

- *'available'* means "*Able to be used or obtained; at someone's disposal*"[2]. Therefore 'making something available' to someone means to put it at his disposal, to make it able to be used by that person.

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[1] Oxford dictionary, http://www.oxforddictionaries.com/definition/english/supply

Therefore the meaning of "supplying" covers also the one of 'making available". . This is confirmed by the definition of 'supplier' in Article 3(32) ("*Supplier of a substance or a mixture means any manufacturer, importer, downstream user or distributor* ***placing on the market*** *a substance, on its own or in a mixture, or a mixture*").

'Making available' is seen as the passive form of providing, while 'supply' is the active form of providing. In this sense 'making available' would mean that a third party has access to the item that has been put at his disposal, while 'supply' would include any action by which the supplier provides the item to that third party.

It should be highlighted that the definition in REACH of *'placing on the market'* does not limit the means by which an item can be supplied or made available. Therefore it covers all ways, direct or indirect, including in the context of the provision of a service for use by someone else. Moreover, as regards the 'supply' as active form of providing an item, the means by which it can be supplied depends also on the item itself, on its purpose, and on the recipient.

For example: soft playground tiles are placed in a public garden or communal playground, being the product provided by both, the operator installing the tiles (service to the town hall) and by the municipality (making it available to the citizens).[3] The act of installing the tiles would cover the supply to the town hall and to the general public, at the same time. Since the communal playground is for all the citizens the town hall supplies it to them by ensuring they are placed physically in the city's property and putting them at the disposal of the citizens. Therefore by that action, the town hall has supplied the citizens with the playground and all its components (swings, slides, tiles, etc).

It should be noted that REACH does not subject placing on the market (supply or making available) to payment in return, therefore not constraining the concept of supply or making available into that of a sale (which is by definition in return of payment).

As regards the supply/making available within the provision of a service it is relevant who, by the provision of that service, would be exposed to the relevant substance: the professional providing the service, the recipient of the service or both?

The fact that REACH does not specify in the definition of placing on the market that it also covers the 'supply' or 'making available' through the provision of a service does not mean that it is excluded, since the definition is worded in general terms and making available or supplied through the provision of a service is just one way to comply with the definition. Moreover, a "supplier" can be a downstream user, not just a distributor (Article 3(32) REACH). This confirms that 'supply' or 'making available' can also happen within the development of a professional/industrial activity, such as being tattooed in a tattoo parlor by a professional tattoo artist.

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[2] Oxford dictionary, http://www.oxforddictionaries.com/definition/english/available

[3] Both of these supplies even involve a financial component within the supply, as the products provided by the town hall are actually paid by public funds (taxpayer's money) and therefore the general public.

Consequently, a restriction for placing on the market for supply to a third party precludes that an item is supplied or made available to that third party, including through the provision of a service.[4]

'General public':

There is no definition in REACH of what 'general public' means. From recitals (4) to (7) in Regulation (EU) No 1272/2013[5] it follows that the intention of the restriction is to protect consumers, for which there is not a definition in REACH either, albeit being mentioned in some definitions (Article 3(13) and (35) and in other provisions (Article 33(2).The use of 'general public' instead of 'consumer' indicates that the scope of the restriction is wide.[6]

Article 3(13) defines 'downstream user' as "*any natural or legal person established within the Community, other than the manufacturer or the importer, who uses a substance, either on its own or in a mixture, in the course of his industrial or professional activities. A distributor or a consumer is not a downstream user. (...)*". Equally, Article 3(35) defines 'recipient of an article' as "an industrial or professional user, or a distributor, being supplied with an article but does not include consumers". Although these definitions refer to the use of a substance or

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[4] For some similarities it is worth to refer to the Products Safety Directive (Directive 2001/95/EC), which in recital (9) states: "*This Directive does not cover services, but in order to secure the attainment of the protection objectives in question, its provisions should also apply to products that are supplied or made available to consumers in the context of service provision for use by them. The safety of the equipment used by service providers themselves to supply a service to consumers does not come within the scope of this Directive since it has to be dealt with in conjunction with the safety of the service provided(...)" and to attain that purpose* Article 2(a) specifies that 'product' means "*any product -including in the context of providing a service- which is intended for consumers or likely, under reasonably foreseeable conditions, to be used by consumers even if not intended for them, and is supplied or made available, whether for consideration or not, in the course of a commercial activity, and whether new used or reconditioned*". Also within the framework of product liability (directive 85/374/EEC concerning liability for defective products products) products are put into circulation, if they are used within a service.

It may also be worth to refer to the ECJ judgment in case C-203/99 where, in the context of Directive 85/374/EEC the ECJ ruled that "*a defective product is put into circulation when it is used during the provision of a specific medical service, consisting in preparing a human organ for transplantation, and the damage caused to the organ results from that preparatory treatment*"

[5] *(4) Information submitted by Germany to the Commission indicates that articles containing PAHs may pose a risk to consumers' health by ingestion, dermal adsorption and, in some cases, by inhalation.*
(...)

(6) The Commission evaluated the information provided by Germany and concluded on the existence of a risk to consumers posed by articles containing PAHs, indicating that a restriction would limit the risk. The Commission also consulted industry and other stakeholders on the impact of restricting the presence of PAHs in articles that could be used by consumers.

(7) In order to protect the health of consumers from the risk arising from exposure to PAHs in articles, limits on the PAH content in the accessible plastic or rubber parts of articles should be set, and the placing on the market of articles containing any of the PAHs in concentrations greater than 1 mg/kg in those parts should be prohibited.

[6] Other restrictions (Benzene, Creosote, Azocolourants and Azodyes) use the term 'consumers'.

the receipt of an article, they may be used to support that in REACH the context in which an item is used is relevant for the definition of a consumer under REACH. (i.e. for other purposes than carrying out industrial or professional activities).

Following the above, the target of this restriction is to protect the general public (beyond the concept of consumer) as opposed to industrial or professional users. This means that articles placed on the market for supply to industrial or professional users are not covered by the restriction. The exclusion of supply for industrial or professional use was intended in the negotiation of the restriction, as reflected in the minutes of the REACH Committee.

However, since the target in this restriction is the general public (and therefore the driver of the interpretation), the fact that an article is placed on the market for supply to both, the general public and a professional, does not exclude it from the restriction, but only the placing on the market for the general public will be subject to the restriction. Only when the item is placed on the market for supply for professionals only (e.g. over the counter) the item is excluded from the scope of entry 50(5).

3. Restriction for 'placing on the market for supply to the general public':

Taking into account the previous points, a restriction for placing on the market for supply to the general public limits the access by the general public to a particular item. **The target is the general public**, regardless of the means by which the item may be put at its disposal (i.e. regardless of the means by which it is supplied).

In the case that the item is supplied or made available in the context of a professional activity, the fact that the supply to a professional (first step) may not be covered by the wording "*placing on the market for supplying to the general public*" does not imply that the supply or availability made to the general public (second step) is not covered either. The supply or availability made to the general public is covered by the restriction in any case, whoever or by whatever means is supplied or made available to the general public.

For example:

1) mat/tiles placed on public playgrounds: A professional installs the tiles in the playground. There is a restriction to place on the market for supply to the general public such an article due to the substances it contains.

There are two "supply steps" here:

- The 'tiles' company supplying the tiles to the town hall which may also provide its installation. The professionals installing the furniture may not be covered by the restriction.

- The town hall, which puts the playground at the disposition of the general public. The citizens, in particular children, who are in contact with these articles, are not using them in order to develop their particular professional activity. These articles are not a tool for their professional activity. Therefore the supply of the playgrounds to the citizens would be covered by the restriction.

For the case that the playground were in a kindergarten or school or in a private playground/amusement park, the same logic would apply. It may be argued that the

supply/installation to the legal entity (school, kindergarten, amusement park) is carried out in the context of a professional activity and it is not covered by the restriction. The teachers are also professionals. However the children supplied with the playground are not professionals and therefore are not using them in the context of their professional activity.

2) Synthetic turf used on artificial sports fields owned by a professional private company (e.g. a football club):

As in the previous examples there are two different supply steps: one by the "turf company" to the football club, which would be excluded from the restriction, and another one from the football club as legal entity to the third parties of whom it puts the football field at their disposal.

When those third parties are professionals (e.g. professional football players), the supply by the football club is not covered by the restriction. However, the football club would not be allowed to put the football field at the disposal of non-professionals, since in that case, it would be covered by the restriction (e.g. juvenile teams, to be used for concerts or open to the general public for non-professional activities).

4. Final remarks

It can be concluded that supply, making available and placing on the market are all interrelated and their definitions are circular, in that they are all used to define each other. Therefore, supplying is understood to mean actively providing something and passively making it available, and includes for example provision of a product/article within a service.

There is however no limitation in terms of payment being needed in return, and therefore the concept of sale is far too narrow in this context.

Furthermore, interpretation 1 as set above would introduce huge problems for enforcement as it will be almost impossible for authorities to distinguish the articles sold to professionals and intended for subsequent use by consumers (that interpretation 1 excludes from the restriction) with the (very same) articles placed on the market to be sold to the general public (that interpretation 1 finds are within the scope of the restriction).

B. Are synthetic turf and rubber mats/tiles installed in public places 'articles'?

In relation to entry 50 of Annex XVII to REACH, this question is only relevant if interpretation 2 is considered to be the correct one and "for supply to the general public" means that the restriction covers articles that were supplied to professionals and are accessible to and capable of being used by the general public. If interpretation 1 is correct, the mere use of these products by members of the public in premises accessible to them (but in the absence of any actual sale of those articles to them) is not within the scope of the restriction.

So far, the Commission's legal interpretation in relation to buildings, which was required in discussions about the interpretation of the restriction in entry 6 of Annex XVII has been:

> *"buildings do not constitute "articles" for the purposes of Article 3(3) - so long as they remain fixed to the land on which they stand. The same applies to other large structures such as bridges. Smaller objects affixed to land such as garden swings or garden statuary are probably to be treated in the same way. However, once again, if the objects are removed, then they constitute "articles"."*

Therefore, according to this interpretation and insofar as synthetic turf and rubber tiles/mats that are permanently fixed are considered part of the facility or premises where they have been laid, arguably they will not be "articles" for the purposes of entry 50 of Annex XVII.

It must be noted that the Commission's interpretation in relation to buildings took as a starting point the definition of 'article' and its further interpretation as reflected in the guidance on substances in articles, which is currently being revised on the basis of the Court judgement in case C-106/14. This interpretation may, therefore, be subject to change.

Furthermore, as regards the rubber crumb infill used in synthetic turf, the rubber is present in the form of loose small granules which are comparable to pellets for plastic materials. As in the case of such pellets, these granules are not articles but mixtures. To the extent that a product containing PAHs is considered a mixture rather than an article, it will fall within the scope of entry 28 of Annex XVII which imposes a limit of 0.01% for benzo(a)pyrene and of 0.1 % for other PAHs classified as Carc 1B. If Member States or the Commission consider these limits too high they are free to propose modifications through an Annex XV dossier.

Action Requested: **The REACH Competent Authorities are invited to express their opinions in relation to the two interpretations in Part A and their views on Part B.**

EUROPEAN TYRE & RUBBER manufacturers' association

POSITION PAPER

Brussels, 10 November 2015

Reference document: **CARACAL CACS/40/2015 document (9/11/2015)**
Interpretation of entry 50 of Annex XVII of REACH

- The recycling of end of life tyres (ELT) in Europe is highly successful. In total 3.4 million tons of ELTs are annually collected in Europe of which 1.3 million tonnes are processed (shredded and granulated) for recycling. The main recycling outlets of ELT-derived rubber granulates are rubber tiles/shock-absorbing surfaces and rubber infill/synthetic turf, representing about 50% of all ELT-derived rubber granulates applications.
  - Rubber tiles can be divided in stable-, roof- and gallery tiles, fall damping tiles. Stable-, roof- and gallery tiles are only supplied to professional installers like contractors.
  - Rubber infill is a construction material only supplied to professional artificial turf installers and is not sold to the general public.

- ETRMA fully supports the legal analysis presented by the EU COM (see CARACAL CACS/40/2015 document (9/11/2015)): *"buildings do not constitute "articles" for the purposes of Article 3(3) - so long as they remain fixed to the land on which they stand. The same applies to other large structures such as bridges. Smaller objects affixed to land such as garden swings or garden statuary are probably to be treated in the same way. However, once again, if the objects are removed, then they constitute "articles".Therefore, according to this interpretation and insofar as synthetic turf and rubber tiles/mats that are permanently fixed are considered part of the facility or premises where they have been laid, arguably they will not be "articles" for the purposes of entry 50 of Annex XVII."*

- ETRMA also supports the view that rubber infill used in synthetic turf should be considered as mixture under REACH, and it will fall within the scope of entry 28 of Annex XVII which imposes a limit of 0.01% for benzo(a)pyrene and dibenz(a,h)anthracene and of 0.1 % for other PAHs classified as Carc 1B.

- There is clear evidence that no health risks are associated with playing on artificial turf with ELT rubber infill. This is largely supported by the following studies:

  - A human volunteer study of dermal PAH uptake among football players on an ELT turf pitch was performed in 2006 in the Netherlands and published in a peer reviewed scientific journal[1] The study provides actual bioavailability data on the uptake of PAH through the skin in a real life exposure situation during 2 hours play at a football pitch with ELT infill. This

[1] Joost G. M. van Rooij & Frans J. Jongeneelen. Hydroxypyrene in urine of football players after playing on artificial sports field with tyre crumb infill. Int Arch Occup Environ Health (2010).

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validated study showed that despite the use of a sensitive biomarker (1-hydroxypyrene in urine) **no significant PAH uptake from the rubber infill could be measured.** This conclusion is supported anno 2015 by the Dutch National Institute for Public Health and the Environment (RIVM)[2]

- A re-assessment[3] of the risk from skin contact with rubber tiles taking the ECHA comments on the PAH restriction proposal dossier into account, was conducted using BaP as a marker. It showed that PAH exposure for young children is well below the lowest value of the Derived Minimal Effect Level (DMEL) proposed by ECHA (5 - 550 pg BaP/kg bw/day).

- Municipalities and local authorities are the most important customers for those applications and are currently renewing their (annual) public tenders for 2016. Therefore, the ECHA guidance should urgently clarify that the scope of entry 50.5 does not apply to synthetic turf / artificial sport grounds and shock absorbing surfaces.

- ETRMA further stresses the need to find a balance between circular economy goals and the environmental goals of REACH and to work for a long term solution which guarantees the sustainable use of secondary raw materials in the economy.

[2] Website RIVM 2015. FAQ's on rubbergranulates

[3] 2015, Dr. J. Van Rooij, European Registered Toxicologist, Ceasar Consult B.V., DETAILED HEALTH RISK ASSESSMENT – CHILDREN PLAYGROUND, Reassessment of PAH exposure among children from granulate/tiles of end of life tyres. Annex I of ETRMA Factsheet (dated 28/10/2015)

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41.

Van: @vaco.nl]
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Aan: DGMI: @vwa.nl'; @granutlex.com)'; @hotmail.com)'; @Desso.com , granuband.com'
Onderwerp: PAH restriction Commission Regulation (EU) nr. 1272 2013 and tyre recycling
Bijlagen: 21 - CACS_40_2015_PAH_Interpretation_Entry_50_Annex_XVII.DOCX; 20151110 _ETRMA Position _CARACALCACS-40-2015_.pdf

Urgentie: Hoog

Ter informatie ontvangt u hierbij enkele stukken die tijdens het CARACAL-overleg van 12 en 13 november 2015 zullen worden besproken.

Namens de bandenbranche (RecyBEM, VACO, ETRMA) zal o.a. 13 november 2015 aanwezig zijn.

Vanzelfsprekend zijn wij graag bereid nadere informatie te verstrekken.

Met vriendelijke groeten,
Vereniging VACO

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EUROPEAN COMMISSION
Directorate-General for Environment
Green Economy
Chemicals

Directorate-General for Internal Market, Industry, Entrepreneurship and SME's
Consumer, Environmental and Health Technologies
REACH
Chemicals

Brussels, 09/11/2015
Doc. **CACS/40/2015**

19th Meeting of Competent Authorities for REACH and CLP (CARACAL)

CA Session

12 – 13 November 2015

Room Robert Schuman, BERLAYMONT

Brussels

Concerns: **Interpretation of entry 50 of Annex XVII to REACH**

Agenda Point: **6.3**

Action Requested: **The REACH and CLP Competent Authorities are invited to take note of this document for discussion**

Interpretation of entry 50 of Annex XVII to REACH

As a consequence of on-going work by ECHA on the development of guidelines for the application of the restriction on PAHs in consumer articles, contained in paragraph 5 of entry 50 of Annex XVII to REACH, two possible interpretations of "placing on the market for supply to the general public" have emerged.

This paper describes the two interpretations and Member States are asked to indicate which they consider best describes the intention of the text that they voted on. Clarification of the meaning of this phrase is urgent both because the new PAH restriction applies from 27 December 2015 and because the phrase is used in other restrictions, which might be affected by the interpretation given to this terminology in this entry.

In addition, the Netherlands and the European Tyre and Rubber Manufacturers Association (ETRMA) have expressed concerns as to whether synthetic turf, and rubber mats and tiles produced from synthetic rubber, fall witin the scope of the restriction. These concerns raise the question whether these products are articles or integral parts of structures, or indeed mixtures. This paper also addresses these issues.

A. Interpretations of paragraph 5 of entry 50 of Annex XVII

Paragraph 5 of entry 50 of Annex XVII states:

*"Articles shall not be **placed on the market for supply to the general public** if any of their rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity, under normal or reasonably foreseeable conditions of use, contain more than 1 mg/kg (0,0001% by weight of this component) of any of the listed PAHs." (emphasis added)*

INTERPRETATION 1

The restriction on placing on the market for supply to the general public does not cover cases where tiles/mats used in public playgrounds and synthetic turf used on artificial sports fields, both made from recycled tyres, are merely made accessible (and not sold) to the public.

The legal basis of Commission Regulation (EU) No 1272/2013 amending Annex XVII as regards PAHs is Article 68(2) of REACH. Therefore the overall aim of the amendment, which adds paragraphs 5 to 8 to entry 50, is to restrict the presence of PAHs in articles that could be used by consumers. This is reflected in Recital (6). As it would be impossible to enforce a restriction on the use by consumers of articles containing PAHs above a certain concentration, Regulation (EU) No 1272/2013 restricts the placing on the market of such articles.

"Placing on the market" is defined in Article 2(12) of REACH as "supplying or making available, whether in return for payment or free of charge, to a third party". The addition of the words "for supply to the general public" in paragraph 5 of entry 50 is intended to describe more precisely the activity that is intended to be caught by this particular restriction. Thus,

for the purposes of this restriction, the activity restricted is the supply of articles containing PAHs to the general public or, put simply, the sale of articles containing PAHs to consumers.

Regulation (EU) No 1272/2013 could have restricted another activity – the placing on the market of articles likely to be used by the general public. This would have prevented sales by one actor in the supply chain to another of articles containing more than the permitted concentration of PAHs where it is reasonably foreseeable that the article would be used by members of the general public. Indeed, this approach was initially proposed by DE (see below the wording suggested in the Annex XV dossier) but was subsequently changed to the current text of paragraph 5.

> *"Articles which could be used by consumers (including articles in contact with the oral mucosa, toys, and childcare articles) shall not be placed on the market, if they contain any of the PAHs listed in column 1 at levels above the limit of quantitation (LOQ)".*

In support of this interpretation, Recital (3) of Regulation (EU) No 1272/2013 states that entry 28 of Annex XVII **bans the sale** of PAHs on their own or in mixtures to the general public. Entry 28 also uses the phrase "placed on the market . . . for supply to the general public". It is, therefore, clear from the Recitals of Regulation (EU) No 1272/2013 that the intention of the Regulation is to provide the same protection for the public from risks posed by articles as entry 28 already provides in relation to substances and mixtures.

The wording of paragraph 5 of entry 50 was extensively discussed in several meetings of the REACH Committee, as reflected in the respective minutes, and the intention is particularly clear in the approved minutes of the meeting of 22-23 February 2013, where it is stated that "*SE proposed to replace the whole term by 'foreseen to be used by general public'. COM indicated that changing the wording would entail the risk to include many professional and even industrial products, which would not be proportionate in the context of a measure the main target of which are consumers (general public).*"

Interpretation 2 set out below would introduce uncertainty in many sectors of manufacturing and the integration of articles in industrial or professional contexts, even where such articles were ultimately used by consumers only occasionally or incidentally. Examples of this include:

- Rubber elements in the handrails of escalators, lifts and other parts of public buildings etc. These elements are manufactured industrially and are installed by professionals. However incidental exposure of consumers using these facilities and premises is possible.
- Plastic or rubber elements in the seats and other parts of trains, aircraft, ships, etc. used by the public. Manufacture and assembly is industrial but occasional use by consumers may lead to exposure to PAHs.

None of these examples seem to have been the objective of the restriction voted on in the REACH Committee. It is recognised that under interpretation 1, articles sold to professionals and intended for subsequent use by consumers would be excluded from the restriction, for example bed linen, furniture and appliances supplied to hotels, restaurants, schools and so on.

However, in practice, any risk to consumer health would be limited because manufacturers of such articles generally use the same production lines and processes for the manufacture of articles that will be supplied to professionals (and could then be used by consumers) and articles intended for sale to consumers.

Of course, any case that is not covered by the restriction as construed in accordance with interpretation 1 which might realistically lead to consumer exposure equivalent to that from articles sold directly to consumers can be addressed by new restrictions. In that event, Member States considering that there are risks that need to be addressed are encouraged to come forward with proposals.

INTERPRETATION 2

The restriction on placing on the market for supply to the general public covers the supply of tiles/mats used on public playgrounds and synthetic turf used on artificial sports fields, both made from recycled tyres.

Arguments supporting this option are the following:

1.- Purpose of the restriction: protection of the general public

The purpose of a restriction is to avoid exposure to a substance of the people (or the environment) by following the conditions specified in the restriction. Therefore its terms should be analysed within that purpose.

A restriction "for placing on the market for supplying to the general public" intends to avoid that the 'general public' is exposed to a particular substance by means of banning the 'placing on the market' of an item to be supplied to them. Therefore the terms of the restriction should be interpreted in a way ensuring that the placing on the market for supply to the general public which leads to an exposure of the substance to that general public is precluded.

2. Analysis of the terms of the restriction: "placing on the market for supplying to the general public"

Article 3(12) REACH defines 'placing on the market' as "*supplying or making available, whether in return for payment or free of charge, to a third party. Import shall be deemed to be placing on the market*".

Where a definition is not given in the legislation, it should be attended to the general meaning of the terms. In this sense:

- *'To Supply'* is defined as "*Make (something needed or wanted) available to someone; provide*"[1].

- *'available'* means "*Able to be used or obtained; at someone's disposal*"[2]. Therefore 'making something available' to someone means to put it at his disposal, to make it able to be used by that person.

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Therefore the meaning of "supplying" covers also the one of 'making available". . This is confirmed by the definition of 'supplier' in Article 3(32) ("*Supplier of a substance or a mixture means any manufacturer, importer, downstream user or distributor* ***placing on the market*** *a substance, on its own or in a mixture, or a mixture*").

'Making available' is seen as the passive form of providing, while 'supply' is the active form of providing. In this sense 'making available' would mean that a third party has access to the item that has been put at his disposal, while 'supply' would include any action by which the supplier provides the item to that third party.

It should be highlighted that the definition in REACH of *'placing on the market'* does not limit the means by which an item can be supplied or made available. Therefore it covers all ways, direct or indirect, including in the context of the provision of a service for use by someone else. Moreover, as regards the 'supply' as active form of providing an item, the means by which it can be supplied depends also on the item itself, on its purpose, and on the recipient.

For example: soft playground tiles are placed in a public garden or communal playground, being the product provided by both, the operator installing the tiles (service to the town hall) and by the municipality (making it available to the citizens).[3] The act of installing the tiles would cover the supply to the town hall and to the general public, at the same time. Since the communal playground is for all the citizens the town hall supplies it to them by ensuring they are placed physically in the city's property and putting them at the disposal of the citizens. Therefore by that action, the town hall has supplied the citizens with the playground and all its components (swings, slides, tiles, etc).

It should be noted that REACH does not subject placing on the market (supply or making available) to payment in return, therefore not constraining the concept of supply or making available into that of a sale (which is by definition in return of payment).

As regards the supply/making available within the provision of a service it is relevant who, by the provision of that service, would be exposed to the relevant substance: the professional providing the service, the recipient of the service or both?

The fact that REACH does not specify in the definition of placing on the market that it also covers the 'supply' or 'making available' through the provision of a service does not mean that it is excluded, since the definition is worded in general terms and making available or supplied through the provision of a service is just one way to comply with the definition. Moreover, a "supplier" can be a downstream user, not just a distributor (Article 3(32) REACH). This confirms that 'supply' or 'making available' can also happen within the development of a professional/industrial activity, such as being tattooed in a tattoo parlor by a professional tattoo artist.

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Consequently, a restriction for placing on the market for supply to a third party precludes that an item is supplied or made available to that third party, including through the provision of a service.[4]

'General public':

There is no definition in REACH of what 'general public' means. From recitals (4) to (7) in Regulation (EU) No 1272/2013[5] it follows that the intention of the restriction is to protect consumers, for which there is not a definition in REACH either, albeit being mentioned in some definitions (Article 3(13) and (35) and in other provisions (Article 33(2).The use of 'general public' instead of 'consumer' indicates that the scope of the restriction is wide.[6]

Article 3(13) defines 'downstream user' as "*any natural or legal person established within the Community, other than the manufacturer or the importer, who uses a substance, either on its own or in a mixture, in the course of his industrial or professional activities. A distributor or a consumer is not a downstream user. (...)*". Equally, Article 3(35) defines 'recipient of an article' as "an industrial or professional user, or a distributor, being supplied with an article but does not include consumers". Although these definitions refer to the use of a substance or

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[4] For some similarities it is worth to refer to the Products Safety Directive (Directive 2001/95/EC), which in recital (9) states: "*This Directive does not cover services, but in order to secure the attainment of the protection objectives in question, its provisions should also apply to products that are supplied or made available to consumers in the context of service provision for use by them. The safety of the equipment used by service providers themselves to supply a service to consumers does not come within the scope of this Directive since it has to be dealt with in conjunction with the safety of the service provided(...)" and to attain that purpose* Article 2(a) specifies that 'product' means "*any product -including in the context of providing a service- which is intended for consumers or likely, under reasonably foreseeable conditions, to be used by consumers even if not intended for them, and is supplied or made available, whether for consideration or not, in the course of a commercial activity, and whether new used or reconditioned*". Also within the framework of product liability (directive 85/374/EEC concerning liability for defective products products) products are put into circulation, if they are used within a service.

It may also be worth to refer to the ECJ judgment in case C-203/99 where, in the context of Directive 85/374/EEC the ECJ ruled that "*a defective product is put into circulation when it is used during the provision of a specific medical service, consisting in preparing a human organ for transplantation, and the damage caused to the organ results from that preparatory treatment*"

[5] *(4) Information submitted by Germany to the Commission indicates that articles containing PAHs may pose a risk to consumers' health by ingestion, dermal adsorption and, in some cases, by inhalation.*
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(6) The Commission evaluated the information provided by Germany and concluded on the existence of a risk to consumers posed by articles containing PAHs, indicating that a restriction would limit the risk. The Commission also consulted industry and other stakeholders on the impact of restricting the presence of PAHs in articles that could be used by consumers.

(7) In order to protect the health of consumers from the risk arising from exposure to PAHs in articles, limits on the PAH content in the accessible plastic or rubber parts of articles should be set, and the placing on the market of articles containing any of the PAHs in concentrations greater than 1 mg/kg in those parts should be prohibited.

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the receipt of an article, they may be used to support that in REACH the context in which an item is used is relevant for the definition of a consumer under REACH. (i.e. for other purposes than carrying out industrial or professional activities).

Following the above, the target of this restriction is to protect the general public (beyond the concept of consumer) as opposed to industrial or professional users. This means that articles placed on the market for supply to industrial or professional users are not covered by the restriction. The exclusion of supply for industrial or professional use was intended in the negotiation of the restriction, as reflected in the minutes of the REACH Committee.

However, since the target in this restriction is the general public (and therefore the driver of the interpretation), the fact that an article is placed on the market for supply to both, the general public and a professional, does not exclude it from the restriction, but only the placing on the market for the general public will be subject to the restriction. Only when the item is placed on the market for supply for professionals only (e.g. over the counter) the item is excluded from the scope of entry 50(5).

3. Restriction for 'placing on the market for supply to the general public':

Taking into account the previous points, a restriction for placing on the market for supply to the general public limits the access by the general public to a particular item. **The target is the general public**, regardless of the means by which the item may be put at its disposal (i.e. regardless of the means by which it is supplied).

In the case that the item is supplied or made available in the context of a professional activity, the fact that the supply to a professional (first step) may not be covered by the wording "*placing on the market for supplying to the general public*" does not imply that the supply or availability made to the general public (second step) is not covered either. The supply or availability made to the general public is covered by the restriction in any case, whoever or by whatever means is supplied or made available to the general public.

For example:

1) mat/tiles placed on public playgrounds: A professional installs the tiles in the playground. There is a restriction to place on the market for supply to the general public such an article due to the substances it contains.

There are two "supply steps" here:

- The 'tiles' company supplying the tiles to the town hall which may also provide its installation. The professionals installing the furniture may not be covered by the restriction.

- The town hall, which puts the playground at the disposition of the general public. The citizens, in particular children, who are in contact with these articles, are not using them in order to develop their particular professional activity. These articles are not a tool for their professional activity. Therefore the supply of the playgrounds to the citizens would be covered by the restriction.

For the case that the playground were in a kindergarten or school or in a private playground/amusement park, the same logic would apply. It may be argued that the

supply/installation to the legal entity (school, kindergarten, amusement park) is carried out in the context of a professional activity and it is not covered by the restriction. The teachers are also professionals. However the children supplied with the playground are not professionals and therefore are not using them in the context of their professional activity.

2) Synthetic turf used on artificial sports fields owned by a professional private company (e.g. a football club):

As in the previous examples there are two different supply steps: one by the "turf company" to the football club, which would be excluded from the restriction, and another one from the football club as legal entity to the third parties of whom it puts the football field at their disposal.

When those third parties are professionals (e.g. professional football players), the supply by the football club is not covered by the restriction. However, the football club would not be allowed to put the football field at the disposal of non-professionals, since in that case, it would be covered by the restriction (e.g. juvenile teams, to be used for concerts or open to the general public for non-professional activities).

4. Final remarks

It can be concluded that supply, making available and placing on the market are all interrelated and their definitions are circular, in that they are all used to define each other. Therefore, supplying is understood to mean actively providing something and passively making it available, and includes for example provision of a product/article within a service.

There is however no limitation in terms of payment being needed in return, and therefore the concept of sale is far too narrow in this context.

Furthermore, interpretation 1 as set above would introduce huge problems for enforcement as it will be almost impossible for authorities to distinguish the articles sold to professionals and intended for subsequent use by consumers (that interpretation 1 excludes from the restriction) with the (very same) articles placed on the market to be sold to the general public (that interpretation 1 finds are within the scope of the restriction).

B. Are synthetic turf and rubber mats/tiles installed in public places 'articles'?

In relation to entry 50 of Annex XVII to REACH, this question is only relevant if interpretation 2 is considered to be the correct one and "for supply to the general public" means that the restriction covers articles that were supplied to professionals and are accessible to and capable of being used by the general public. If interpretation 1 is correct, the mere use of these products by members of the public in premises accessible to them (but in the absence of any actual sale of those articles to them) is not within the scope of the restriction.

So far, the Commission's legal interpretation in relation to buildings, which was required in discussions about the interpretation of the restriction in entry 6 of Annex XVII has been:

> *"buildings do not constitute "articles" for the purposes of Article 3(3) - so long as they remain fixed to the land on which they stand. The same applies to other large structures such as bridges. Smaller objects affixed to land such as garden swings or garden statuary are probably to be treated in the same way. However, once again, if the objects are removed, then they constitute "articles"."*

Therefore, according to this interpretation and insofar as synthetic turf and rubber tiles/mats that are permanently fixed are considered part of the facility or premises where they have been laid, arguably they will not be "articles" for the purposes of entry 50 of Annex XVII.

It must be noted that the Commission's interpretation in relation to buildings took as a starting point the definition of 'article' and its further interpretation as reflected in the guidance on substances in articles, which is currently being revised on the basis of the Court judgement in case C-106/14. This interpretation may, therefore, be subject to change.

Furthermore, as regards the rubber crumb infill used in synthetic turf, the rubber is present in the form of loose small granules which are comparable to pellets for plastic materials. As in the case of such pellets, these granules are not articles but mixtures. To the extent that a product containing PAHs is considered a mixture rather than an article, it will fall within the scope of entry 28 of Annex XVII which imposes a limit of 0.01% for benzo(a)pyrene and of 0.1 % for other PAHs classified as Carc 1B. If Member States or the Commission consider these limits too high they are free to propose modifications through an Annex XV dossier.

Action Requested: **The REACH Competent Authorities are invited to express their opinions in relation to the two interpretations in Part A and their views on Part B.**

EUROPEAN TYRE & RUBBER manufacturers' association

POSITION PAPER

Brussels, 10 November 2015

Reference document: **CARACAL CACS/40/2015 document (9/11/2015)**
Interpretation of entry 50 of Annex XVII of REACH

- The recycling of end of life tyres (ELT) in Europe is highly successful. In total 3.4 million tons of ELTs are annually collected in Europe of which 1.3 million tonnes are processed (shredded and granulated) for recycling. The main recycling outlets of ELT-derived rubber granulates are rubber tiles/shock-absorbing surfaces and rubber infill/synthetic turf, representing about 50% of all ELT-derived rubber granulates applications.
  - Rubber tiles can be divided in stable-, roof- and gallery tiles, fall damping tiles. Stable-, roof- and gallery tiles are only supplied to professional installers like contractors.
  - Rubber infill is a construction material only supplied to professional artificial turf installers and is not sold to the general public.

- ETRMA fully supports the legal analysis presented by the EU COM (see CARACAL CACS/40/2015 document (9/11/2015)): *"buildings do not constitute "articles" for the purposes of Article 3(3) - so long as they remain fixed to the land on which they stand. The same applies to other large structures such as bridges. Smaller objects affixed to land such as garden swings or garden statuary are probably to be treated in the same way. However, once again, if the objects are removed, then they constitute "articles".Therefore, according to this interpretation and insofar as synthetic turf and rubber tiles/mats that are permanently fixed are considered part of the facility or premises where they have been laid, arguably they will not be "articles" for the purposes of entry 50 of Annex XVII."*

- ETRMA also supports the view that rubber infill used in synthetic turf should be considered as mixture under REACH, and it will fall within the scope of entry 28 of Annex XVII which imposes a limit of 0.01% for benzo(a)pyrene and dibenz(a,h)anthracene and of 0.1 % for other PAHs classified as Carc 1B.

- There is clear evidence that no health risks are associated with playing on artificial turf with ELT rubber infill. This is largely supported by the following studies:

  - A human volunteer study of dermal PAH uptake among football players on an ELT turf pitch was performed in 2006 in the Netherlands and published in a peer reviewed scientific journal[1] The study provides actual bioavailability data on the uptake of PAH through the skin in a real life exposure situation during 2 hours play at a football pitch with ELT infill. This

[1] Joost G. M. van Rooij & Frans J. Jongeneelen. Hydroxypyrene in urine of football players after playing on artificial sports field with tyre crumb infill. Int Arch Occup Environ Health (2010)

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validated study showed that despite the use of a sensitive biomarker (1-hydroxypyrene in urine) **no significant PAH uptake from the rubber infill could be measured.** This conclusion is supported anno 2015 by the Dutch National Institute for Public Health and the Environment (RIVM)[2]

- A re-assessment[3] of the risk from skin contact with rubber tiles taking the ECHA comments on the PAH restriction proposal dossier into account, was conducted using BaP as a marker. It showed that PAH exposure for young children is well below the lowest value of the Derived Minimal Effect Level (DMEL) proposed by ECHA (5 - 550 pg BaP/kg bw/day).

- Municipalities and local authorities are the most important customers for those applications and are currently renewing their (annual) public tenders for 2016. Therefore, the ECHA guidance should urgently clarify that the scope of entry 50.5 does not apply to synthetic turf / artificial sport grounds and shock absorbing surfaces.

- ETRMA further stresses the need to find a balance between circular economy goals and the environmental goals of REACH and to work for a long term solution which guarantees the sustainable use of secondary raw materials in the economy.

[2] Website RIVM 2015. FAQ's on rubbergranulates

[3] 2015, Dr. J. Van Rooij, European Registered Toxicologist, Ceasar Consult B.V., DETAILED HEALTH RISK ASSESSMENT – CHILDREN PLAYGROUND, Reassessment of PAH exposure among children from granulate/tiles of end of life tyres. Annex I of ETRMA Factsheet (dated 28/10/2015)

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42.

EUROPEAN COMMISSION
Directorate-General for Environment
Green Economy
Chemicals

Directorate-General for Internal Market, Industry, Entrepreneurship and SME's
Consumer, Environmental and Health Technologies
REACH
Chemicals

Brussels, 11/11/2015
Doc. **CA/106/2015**

19th Meeting of Competent Authorities for REACH and CLP (CARACAL)

12 – 13 November 2015

Room Robert Schuman, BERLAYMONT

Brussels

Concerns: **Guidelines on PAHs and nickel**

Agenda Point: **14**

Action Requested: **The REACH and CLP Competent Authorities are invited to take note of this document for discussion**

Interpretation of entry 50 of Annex XVII to REACH

As a consequence of on-going work by ECHA on the development of guidelines for the application of the restriction on PAHs in consumer articles, contained in paragraph 5 of entry 50 of Annex XVII to REACH, two possible interpretations of "placing on the market for supply to the general public" have emerged.

This paper describes the two interpretations and Member States are asked to indicate which they consider best describes the intention of the text that they voted on. Clarification of the meaning of this phrase is urgent both because the new PAH restriction applies from 27 December 2015 and because the phrase is used in other restrictions, which might be affected by the interpretation given to this terminology in this entry.

In addition, the Netherlands and the European Tyre and Rubber Manufacturers Association (ETRMA) have expressed concerns as to whether synthetic turf, and rubber mats and tiles produced from synthetic rubber, fall witin the scope of the restriction. These concerns raise the question whether these products are articles or integral parts of structures, or indeed mixtures. This paper also addresses these issues.

A. Interpretations of paragraph 5 of entry 50 of Annex XVII

Paragraph 5 of entry 50 of Annex XVII states:

*"Articles shall not be **placed on the market for supply to the general public** if any of their rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity, under normal or reasonably foreseeable conditions of use, contain more than 1 mg/kg (0,0001% by weight of this component) of any of the listed PAHs." (emphasis added)*

INTERPRETATION 1

The restriction on placing on the market for supply to the general public does not cover cases where tiles/mats used in public playgrounds and synthetic turf used on artificial sports fields, both made from recycled tyres, are merely made accessible (and not sold) to the public.

The legal basis of Commission Regulation (EU) No 1272/2013 amending Annex XVII as regards PAHs is Article 68(2) of REACH. Therefore the overall aim of the amendment, which adds paragraphs 5 to 8 to entry 50, is to restrict the presence of PAHs in articles that could be used by consumers. This is reflected in Recital (6). As it would be impossible to enforce a restriction on the use by consumers of articles containing PAHs above a certain concentration, Regulation (EU) No 1272/2013 restricts the placing on the market of such articles.

"Placing on the market" is defined in Article 2(12) of REACH as "supplying or making available, whether in return for payment or free of charge, to a third party". The addition of the words "for supply to the general public" in paragraph 5 of entry 50 is intended to describe more precisely the activity that is intended to be caught by this particular restriction. Thus,

for the purposes of this restriction, the activity restricted is the supply of articles containing PAHs to the general public or, put simply, the sale of articles containing PAHs to consumers.

Regulation (EU) No 1272/2013 could have restricted another activity – the placing on the market of articles likely to be used by the general public. This would have prevented sales by one actor in the supply chain to another of articles containing more than the permitted concentration of PAHs where it is reasonably foreseeable that the article would be used by members of the general public. Indeed, this approach was initially proposed by DE (see below the wording suggested in the Annex XV dossier) but was subsequently changed to the current text of paragraph 5.

> *"Articles which could be used by consumers (including articles in contact with the oral mucosa, toys, and childcare articles) shall not be placed on the market, if they contain any of the PAHs listed in column 1 at levels above the limit of quantitation (LOQ)".*

In support of this interpretation, Recital (3) of Regulation (EU) No 1272/2013 states that entry 28 of Annex XVII **bans the sale** of PAHs on their own or in mixtures to the general public. Entry 28 also uses the phrase "placed on the market . . . for supply to the general public". It is, therefore, clear from the Recitals of Regulation (EU) No 1272/2013 that the intention of the Regulation is to provide the same protection for the public from risks posed by articles as entry 28 already provides in relation to substances and mixtures.

The wording of paragraph 5 of entry 50 was extensively discussed in several meetings of the REACH Committee, as reflected in the respective minutes, and the intention is particularly clear in the approved minutes of the meeting of 22-23 February 2013, where it is stated that *"SE proposed to replace the whole term by 'foreseen to be used by general public'. COM indicated that changing the wording would entail the risk to include many professional and even industrial products, which would not be proportionate in the context of a measure the main target of which are consumers (general public)."*

Interpretation 2 set out below would introduce uncertainty in many sectors of manufacturing and the integration of articles in industrial or professional contexts, even where such articles were ultimately used by consumers only occasionally or incidentally. Examples of this include:

- Rubber elements in the handrails of escalators, lifts and other parts of public buildings etc. These elements are manufactured industrially and are installed by professionals. However incidental exposure of consumers using these facilities and premises is possible.
- Plastic or rubber elements in the seats and other parts of trains, aircraft, ships, etc. used by the public. Manufacture and assembly is industrial but occasional use by consumers may lead to exposure to PAHs.

None of these examples seem to have been the objective of the restriction voted on in the REACH Committee. It is recognised that under interpretation 1, articles sold to professionals and intended for subsequent use by consumers would be excluded from the restriction, for example bed linen, furniture and appliances supplied to hotels, restaurants, schools and so on.

However, in practice, any risk to consumer health would be limited because manufacturers of such articles generally use the same production lines and processes for the manufacture of articles that will be supplied to professionals (and could then be used by consumers) and articles intended for sale to consumers.

Of course, any case that is not covered by the restriction as construed in accordance with interpretation 1 which might realistically lead to consumer exposure equivalent to that from articles sold directly to consumers can be addressed by new restrictions. In that event, Member States considering that there are risks that need to be addressed are encouraged to come forward with proposals.

INTERPRETATION 2

The restriction on placing on the market for supply to the general public covers the supply of tiles/mats used on public playgrounds and synthetic turf used on artificial sports fields, both made from recycled tyres.

Arguments supporting this option are the following:

1.- Purpose of the restriction: protection of the general public

The purpose of a restriction is to avoid exposure to a substance of the people (or the environment) by following the conditions specified in the restriction. Therefore its terms should be analysed within that purpose.

A restriction "for placing on the market for supplying to the general public" intends to avoid that the 'general public' is exposed to a particular substance by means of banning the 'placing on the market' of an item to be supplied to them. Therefore the terms of the restriction should be interpreted in a way ensuring that the placing on the market for supply to the general public which leads to an exposure of the substance to that general public is precluded.

2. Analysis of the terms of the restriction: "placing on the market for supplying to the general public"

Article 3(12) REACH defines 'placing on the market' as "*supplying or making available, whether in return for payment or free of charge, to a third party. Import shall be deemed to be placing on the market*".

Where a definition is not given in the legislation, it should be attended to the general meaning of the terms. In this sense:

- *'To Supply'* is defined as "*Make (something needed or wanted) available to someone; provide*"[1].

- *'available'* means "*Able to be used or obtained; at someone's disposal*"[2]. Therefore 'making something available' to someone means to put it at his disposal, to make it able to be used by that person.

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[1] Oxford dictionary, http://www.oxforddictionaries.com/definition/english/supply

Therefore the meaning of "supplying" covers also the one of 'making available". . This is confirmed by the definition of 'supplier' in Article 3(32) ("*Supplier of a substance or a mixture means any manufacturer, importer, downstream user or distributor* ***placing on the market*** *a substance, on its own or in a mixture, or a mixture*").

'Making available' is seen as the passive form of providing, while 'supply' is the active form of providing. In this sense 'making available' would mean that a third party has access to the item that has been put at his disposal, while 'supply' would include any action by which the supplier provides the item to that third party.

It should be highlighted that the definition in REACH of *'placing on the market'* does not limit the means by which an item can be supplied or made available. Therefore it covers all ways, direct or indirect, including in the context of the provision of a service for use by someone else. Moreover, as regards the 'supply' as active form of providing an item, the means by which it can be supplied depends also on the item itself, on its purpose, and on the recipient.

For example: soft playground tiles are placed in a public garden or communal playground, being the product provided by both, the operator installing the tiles (service to the town hall) and by the municipality (making it available to the citizens).[3] The act of installing the tiles would cover the supply to the town hall and to the general public, at the same time. Since the communal playground is for all the citizens the town hall supplies it to them by ensuring they are placed physically in the city's property and putting them at the disposal of the citizens. Therefore by that action, the town hall has supplied the citizens with the playground and all its components (swings, slides, tiles, etc).

It should be noted that REACH does not subject placing on the market (supply or making available) to payment in return, therefore not constraining the concept of supply or making available into that of a sale (which is by definition in return of payment).

As regards the supply/making available within the provision of a service it is relevant who, by the provision of that service, would be exposed to the relevant substance: the professional providing the service, the recipient of the service or both?

The fact that REACH does not specify in the definition of placing on the market that it also covers the 'supply' or 'making available' through the provision of a service does not mean that it is excluded, since the definition is worded in general terms and making available or supplied through the provision of a service is just one way to comply with the definition. Moreover, a "supplier" can be a downstream user, not just a distributor (Article 3(32) REACH). This confirms that 'supply' or 'making available' can also happen within the development of a professional/industrial activity, such as being tattooed in a tattoo parlor by a professional tattoo artist.

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[2] Oxford dictionary, http://www.oxforddictionaries.com/definition/english/available

[3] Both of these supplies even involve a financial component within the supply, as the products provided by the town hall are actually paid by public funds (taxpayer's money) and therefore the general public.

Consequently, a restriction for placing on the market for supply to a third party precludes that an item is supplied or made available to that third party, including through the provision of a service.[4]

'General public':

There is no definition in REACH of what 'general public' means. From recitals (4) to (7) in Regulation (EU) No 1272/2013[5] it follows that the intention of the restriction is to protect consumers, for which there is not a definition in REACH either, albeit being mentioned in some definitions (Article 3(13) and (35) and in other provisions (Article 33(2).The use of 'general public' instead of 'consumer' indicates that the scope of the restriction is wide.[6]

Article 3(13) defines 'downstream user' as "*any natural or legal person established within the Community, other than the manufacturer or the importer, who uses a substance, either on its own or in a mixture, in the course of his industrial or professional activities. A distributor or a consumer is not a downstream user. (...)*". Equally, Article 3(35) defines 'recipient of an article' as "an industrial or professional user, or a distributor, being supplied with an article but does not include consumers". Although these definitions refer to the use of a substance or

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It may also be worth to refer to the ECJ judgment in case C-203/99 where, in the context of Directive 85/374/EEC the ECJ ruled that "*a defective product is put into circulation when it is used during the provision of a specific medical service, consisting in preparing a human organ for transplantation, and the damage caused to the organ results from that preparatory treatment*"

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(6) The Commission evaluated the information provided by Germany and concluded on the existence of a risk to consumers posed by articles containing PAHs, indicating that a restriction would limit the risk. The Commission also consulted industry and other stakeholders on the impact of restricting the presence of PAHs in articles that could be used by consumers.

(7) In order to protect the health of consumers from the risk arising from exposure to PAHs in articles, limits on the PAH content in the accessible plastic or rubber parts of articles should be set, and the placing on the market of articles containing any of the PAHs in concentrations greater than 1 mg/kg in those parts should be prohibited.

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the receipt of an article, they may be used to support that in REACH the context in which an item is used is relevant for the definition of a consumer under REACH. (i.e. for other purposes than carrying out industrial or professional activities).

Following the above, the target of this restriction is to protect the general public (beyond the concept of consumer) as opposed to industrial or professional users. This means that articles placed on the market for supply to industrial or professional users are not covered by the restriction. The exclusion of supply for industrial or professional use was intended in the negotiation of the restriction, as reflected in the minutes of the REACH Committee.

However, since the target in this restriction is the general public (and therefore the driver of the interpretation), the fact that an article is placed on the market for supply to both, the general public and a professional, does not exclude it from the restriction, but only the placing on the market for the general public will be subject to the restriction. Only when the item is placed on the market for supply for professionals only (e.g. over the counter) the item is excluded from the scope of entry 50(5).

3. Restriction for 'placing on the market for supply to the general public':

Taking into account the previous points, a restriction for placing on the market for supply to the general public limits the access by the general public to a particular item. **The target is the general public**, regardless of the means by which the item may be put at its disposal (i.e. regardless of the means by which it is supplied).

In the case that the item is supplied or made available in the context of a professional activity, the fact that the supply to a professional (first step) may not be covered by the wording "*placing on the market for supplying to the general public*" does not imply that the supply or availability made to the general public (second step) is not covered either. The supply or availability made to the general public is covered by the restriction in any case, whoever or by whatever means is supplied or made available to the general public.

For example:

1) mat/tiles placed on public playgrounds: A professional installs the tiles in the playground. There is a restriction to place on the market for supply to the general public such an article due to the substances it contains.

There are two "supply steps" here:

- The 'tiles' company supplying the tiles to the town hall which may also provide its installation. The professionals installing the furniture may not be covered by the restriction.

- The town hall, which puts the playground at the disposition of the general public. The citizens, in particular children, who are in contact with these articles, are not using them in order to develop their particular professional activity. These articles are not a tool for their professional activity. Therefore the supply of the playgrounds to the citizens would be covered by the restriction.

For the case that the playground were in a kindergarten or school or in a private playground/amusement park, the same logic would apply. It may be argued that the

supply/installation to the legal entity (school, kindergarten, amusement park) is carried out in the context of a professional activity and it is not covered by the restriction. The teachers are also professionals. However the children supplied with the playground are not professionals and therefore are not using them in the context of their professional activity.

2) Synthetic turf used on artificial sports fields owned by a professional private company (e.g. a football club):

As in the previous examples there are two different supply steps: one by the "turf company" to the football club, which would be excluded from the restriction, and another one from the football club as legal entity to the third parties of whom it puts the football field at their disposal.

When those third parties are professionals (e.g. professional football players), the supply by the football club is not covered by the restriction. However, the football club would not be allowed to put the football field at the disposal of non-professionals, since in that case, it would be covered by the restriction (e.g. juvenile teams, to be used for concerts or open to the general public for non-professional activities).

4. Final remarks

It can be concluded that supply, making available and placing on the market are all interrelated and their definitions are circular, in that they are all used to define each other. Therefore, supplying is understood to mean actively providing something and passively making it available, and includes for example provision of a product/article within a service.

There is however no limitation in terms of payment being needed in return, and therefore the concept of sale is far too narrow in this context.

Furthermore, interpretation 1 as set above would introduce huge problems for enforcement as it will be almost impossible for authorities to distinguish the articles sold to professionals and intended for subsequent use by consumers (that interpretation 1 excludes from the restriction) with the (very same) articles placed on the market to be sold to the general public (that interpretation 1 finds are within the scope of the restriction).

B. Are synthetic turf and rubber mats/tiles installed in public places 'articles'?

In relation to entry 50 of Annex XVII to REACH, this question is only relevant if interpretation 2 is considered to be the correct one and "for supply to the general public" means that the restriction covers articles that were supplied to professionals and are accessible to and capable of being used by the general public. If interpretation 1 is correct, the mere use of these products by members of the public in premises accessible to them (but in the absence of any actual sale of those articles to them) is not within the scope of the restriction.

So far, the Commission's legal interpretation in relation to buildings, which was required in discussions about the interpretation of the restriction in entry 6 of Annex XVII has been:

> *"buildings do not constitute "articles" for the purposes of Article 3(3) - so long as they remain fixed to the land on which they stand. The same applies to other large structures such as bridges. Smaller objects affixed to land such as garden swings or garden statuary are probably to be treated in the same way. However, once again, if the objects are removed, then they constitute "articles"."*

Therefore, according to this interpretation and insofar as synthetic turf and rubber tiles/mats that are permanently fixed are considered part of the facility or premises where they have been laid, arguably they will not be "articles" for the purposes of entry 50 of Annex XVII.

It must be noted that the Commission's interpretation in relation to buildings took as a starting point the definition of 'article' and its further interpretation as reflected in the guidance on substances in articles, which is currently being revised on the basis of the Court judgement in case C-106/14. This interpretation may, therefore, be subject to change.

Furthermore, as regards the rubber crumb infill used in synthetic turf, the rubber is present in the form of loose small granules which are comparable to pellets for plastic materials. As in the case of such pellets, these granules are not articles but mixtures. To the extent that a product containing PAHs is considered a mixture rather than an article, it will fall within the scope of entry 28 of Annex XVII which imposes a limit of 0.01% for benzo(a)pyrene and of 0.1 % for other PAHs classified as Carc 1B. If Member States or the Commission consider these limits too high they are free to propose modifications through an Annex XV dossier.

Action Requested: **The REACH Competent Authorities are invited to express their opinions in relation to the two interpretations in Part A and their views on Part B.**

43.

Van: .@kcleiden.nl]
Verzonden: dinsdag 10 november 2015 17:37
Aan: DGMI: @vwa.nl'; "
@granuflex.com)';
@hotmail.com)'; @Desso.com';
@granuband.com'
Onderwerp: Concept verslag van overleg over EU Verordening nr. 1272/2013
Bijlagen: NU-15-66 EU Verordening nr. 12722013.DOCX

Geachte

Hierbij ontvangt u het verslag van het overleg op 27 oktober 2015 over de EU Verordening nr. 1272/2013. ondergetekende hebben de inhoud met elkaar afgestemd. Wij verzoeken u eventuele op- en aanmerkingen aan ons door te geven.

Vanzelfsprekend zijn wij graag bereid nadere informatie te verstrekken.

Met vriendelijke groeten,
Vereniging VACO

T: ·
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Archimedesweg 31
Postbus 33
2300 AA LEIDEN

NOTULEN

OVERLEG : EU Verordening nr. 1272/2013
DATUM : 27 oktober 2015
AANVANG : 9.30 - 12.30 uur
PLAATS : Granuband B.V.
KENMERK : NU-15-66

Aanwezig namens de overheid:

RIVM
Ministerie van VWS
NVWA
Ministerie van IenM

Aanwezig namens de bandenbranche/recyclingbranche

NRK/RecyBEM
RecyBEM
Kempeneers Milieu en Management b.v.
RecyBEM
Granuband b.v. / Granuflex
Granuband b.v. / Granuflex
Desso/Fieldturf
VACO
VACO

1. OPENING / GOEDKEURING AGENDA

De heet met name de van Granuband/Granuflex en de van harte welkom. . . is een van de grootste kunstgrasproducenten ter wereld. De deelt mee dat de heren door omstandigheden pas bij agendapunt 3 zullen aansluiten.

2. RONDLEIDING BIJ GRANUBAND, PRODUCTIE VAN INFILL EN VALDEMPINGSTEGELS

De dankt de aanwezigen voor de komst naar zijn bedrijf opdat nader kennis kan worden gemaakt met het belang van recycling van banden en de productie van rubbergranulaat. Hij hoopt dat dit bezoek bijdraagt aan de wijziging van de Verordening opdat de productie bij Granuband ook na 27 december 2015 in vergelijkbare mate kan doorgaan. Het bedrijf, actief sinds 1991, verwerkt 30.000 ton banden op jaarbasis waarvan circa 70% betrekking heeft op de producten waarvan bij de overheid in meer of mindere mate de indruk bestaat dat deze onder de Verordening kunnen vallen. Er werken circa 50 medewerkers bij het bedrijf.

Granuband/Granuflex tracht het assortiment met innovatieve producten te verbreden. Hierbij wordt o.a. gedacht aan onderdelen voor de tramrails voor het GVB ter beperking van de geluidshinder. Daarnaast aan tegels voor groene daken.

Granuband heeft twee vestigingen (Nederweert en Amsterdam). Beide vestigingen houden zich bezig met de inzameling van gebruikte banden in Nederland. De vestiging in Nederweert is recent ook met de inzameling in België gestart. Daarnaast verkoopt Granuband de technologie, rond het vermalen van banden, aan verwerkingsbedrijven in het buitenland.

Bij de verwerking van banden komen drie fracties vrij: rubbergranulaat, staal, dat door de staalindustrie bij de productie wordt gebruikt, en textiel dat voor verbranding met energieterugwinning wordt aangeboden.

De leiden de aanwezigen rond in de fabriek.

3. VERSLAG VAN DE VORIGE VERGADERING D.D. 28 AUGUSTUS 2015

deelt mee dat het verslag soms meer de wens van het bedrijfsleven weergeeft (b.v. overheid zal pas handhaven als Guidance definitief is vastgesteld) dan dat dit feitelijk door de overheid is gesteld zegt toe extra aandacht aan de formulering van het verslag te besteden.

Op verzoek van zullen RecyBEM en VACO de Position paper aanvullen met informatie over de trend van het PAK's gehalte in de afgelopen jaren. deelt mee dat deze informatie niet is toegevoegd omdat zowel de aard van de onderzoeken (PAK 10, PAK 16 e.d.) als de analysemethoden (o.a. volgens Besluit bodemkwaliteit: AP04, GS Duitsland) verschillen. De onderlinge vergelijkbaarheid wordt hierdoor bemoeilijkt waardoor het onduidelijk is of je betrouwbaar een trend kunt herleiden. Op basis van de analyses van 2015 is een daling te verwachten, mede als gevolg van Directive 76/769/EEC die eisen stelt aan het PAH 8 gehalte in de extender olie, die wordt toegepast bij de productie van banden. De vertegenwoordigers van de overheid verzoeken de meerjaren trend van het PAK gehalte toch op te nemen in het document opdat zij een concreter gevoel krijgen bij het PAK's gehalte en de ontwikkelingen daarin.

Vastgesteld wordt dat men zich in de andere EU-lidstaten niet of nauwelijks bewust is van de gevolgen van de Verordening. Hierdoor is in deze lidstaten weinig informatie beschikbaar. RecyBEM en VACO zijn reeds actief om de bewustwording in de EU-lidstaten te vergroten.

Tijdens het Caracal-overleg is een goede cijfermatige onderbouwing van belang. Daarom is het van belang dat dit in de Position Paper uitgebreider aan bod komt.

4. POSITION PAPER VAN RECYBEM/VACO: 'PAH RESTRICTION REGULATION (EU) 1272/2013 IN RELATION TO THE EUROPEAN AND DUTCH TYRE RECYCLING'

- Gezondheidsaspecten

licht toe dat in de position paper een herberekening van het gezondheidsrisico is opgesteld. Deze herberekening hanteert de kritiekpunten uit de review die ECHA heeft uitgevoerd op het oorspronkelijke PAH restriction proposal dossier van Duitsland. De herberekening is uitgevoerd door register toxicoloog. De conclusie van de heer is dat de blootstellingsscenario's voor rubbertegels onder de DMEL blijft. Ook wijst de heer de aanwezigen nogmaals op de gezondheidskundige onderzoeken naar infill uit 2007, waarbij de conclusie is dat er geen sprake is van PAK's opname uit infill. Deze conclusie staat anno 2015 ook op de website van RIVM. De heer verzoekt de vertegenwoordigers van de overheid deze informatie te gebruiken om opnieuw binnen EU de discussie aan te gaan over de werkelijke gezondheidsrisico's. Het is immers bijzonder teleurstellend als een sector zonder goede motivatie de productie onmogelijk wordt gemaakt. Vastgesteld wordt dat een discussie hierover in Europees verband moeilijk is. Deze discussie had in de voorbereiding van de procedure van EU 1272/2013 moeten plaatsvinden.

De heer deelt mee dat hij geen onderzoek heeft gedaan naar de inhoud van de Position Paper in relatie tot het Duitse rapport. Het RIVM zal actie ondernemen als daartoe door het ministerie van VWS opdracht wordt gegeven. De heer deelt mee dat hij veel begrip heeft voor de zorgen van de bandenbranche en in dat kader graag wil meedenken maar zich afvraagt wat een dergelijk onderzoek kan opleveren. Immers het commentaar op dit rapport had reeds veel eerder ingediend moeten worden. De Nederlandse overheid heeft nu gewoon de verplichting de wet (lees de Verordening) uit te voeren.

De heer is van mening dat juist in een situatie waarin er nog onduidelijkheid is over de definitie van langdurig en kortdurend huidcontact het gezondheidsrisico als belangrijke factor zou moeten meewegen. De kritische opmerkingen van ECHA op het Duitse PAH restriction Proposal zijn helaas niet meegenomen. In dat verband is het ook belangrijk te weten de in vivo-studie uitgevoerd door Industox medio 2006, onder auspicien van o.a. RIVM, in het geheel niet is meegenomen door het Duitse rapport en ook niet bij de beoordeling daarvan door ECHA. Deze in vivo-studie is het enige rapport waarbij niet gewerkt is met modellen maar met mensen om daadwerkelijke PAK's opname in een real life situatie te meten. Bij de bepaling welke producten dus wel of niet onder de scope van langdurig of frequent kortdurend thuishoren is het dus van belang deze informatie over het ontbreken van risico's voor de gezondheid mee te wegen.

Vanuit de bandenbranche wordt benadrukt dat als infill en tegels onder de Verordening vallen en daardoor per 27 december 2015 niet meer op de markt gebracht mogen worden dit veel maatschappelijke onrust teweeg zal brengen. Immers er liggen in EU circa 15.000 kunstgrasvelden met rubbergranulaat van gemalen banden en veel kinderspeelplaatsen met rubber tegels. Velen zullen zich afvragen waarom nieuwe kunstgrasvelden niet meer met rubbergranulaat van banden mogen worden aangelegd terwijl de bestaande velden nog jarenlang mogen worden gebruikt. Dit is aan het grote publiek niet uit te leggen. Als er door maatschappelijke onrust de infill in 15.000 velden moet worden vervangen kost dit een paar miljard euro.

Mevrouw verzoekt om genoemde redenen bij de Europese Commissie aan te dringen op uitstel van de inwerkingtreding van de Verordening. De vertegenwoordigers van de overheid zullen hierover met elkaar van gedachten wisselen.

De heer deelt mee dat de bandenbranche bereid is, indien dat door de overheid gewenst wordt, opnieuw nader onderzoek naar migratie te doen.

De heer deelt mee dat hij recent via de heer informatie heeft ontvangen over een gezondheidsdiscussie rond rubbergranulaat van gemalen banden in de USA. Deze informatie is gedateerd 20 oktober 2015. Hij stuurt deze informatie door naar VACO/aanwezigen. De heer deelt mee dat de aansprakelijkheid in de USA een bijzonder grote rol speelt en daardoor wel eens een andere indruk kan opwekken dan de werkelijkheid.

- Milieu-aspecten (recycling, circulaire economie)
  De heer wijst op het belang dat de nationale overheid en de EU hecht aan de circulaire economie. De informatie hierover, opgenomen in de Postion paper, kan hierbij goed worden gebruikt. In dit kader zal afstemming tussen de verschillende ministeries plaatsvinden.

  De heer wijst op de LCA (Ecotest) die door RecyBEM/ARN enkele jaren geleden is opgesteld voor rubbergranulaat in vergelijking met andere recyclingmethoden van gebruikte banden. De RecyBEM zal een LCA-vergelijking laten opstellen met alternatieve infill-materialen zoals TPE en EPDM. Deze zal in de Position paper worden opgenomen.

- Maatschappelijke aspecten
  De heer stelt de aanwezigen op de hoogte van het maatschappelijk belang van rubbergranulaat van gemalen banden toegepast als infill in kunstgrasvelden. In dit kader wijst hij op de uitstekende sporttechnische eigenschappen. Circa 95% van de kunstgrasvelden is hiermee ingestrooid. Alternatieven bieden minder voordelen (b.v. levensduur van cocos is beperkt, na 1 jaar verwordt dit tot stof). Hij deelt mee dat er in de afgelopen jaren vanwege de discussie over SBR infill regelmatig op verzoek van opdrachtgevers is uitgeweken naar alternatieven. Echter in diverse gevallen bleek dit niet aan de gestelde kwaliteitseisen te voldoen waardoor Fieldturf in de laatste vijf jaar de alternatieve infill van circa 75 velden in Duitsland vervroegd heeft moeten vervangen.

  Op verzoek van de heer zal de heer een overzicht maken van de voor- en nadelen van de verschillende alternatieven waarbij aandacht is voor de sporttechnische eigenschappen, beschikbaarheid (bestellingen voor kurk worden voor het jaar 2016

waarschijnlijk, gezien de beschikbaarheid, niet meer gehonoreerd), duurzaamheid, indicatie van de kosten bij aanschaf en onderhoud. Dit zal in de Position paper worden opgenomen.

De heer benadrukt dat het voor eenieder van groot belang is dat er snel duidelijkheid komt. Immers de bestekken voor opdrachten voor 2016 worden reeds uitgezet. Nu offertes uitbrengen is bijzonder lastig. Immers: voor welk infill moet je kiezen? Ook de heer benadrukt dat Granuband deze vragen en signalen krijgt uit de markt. De heer geeft aan dat wetten en verordeningen juridisch op diverse manieren gelezen kunnen worden. Een van die lezingen is dat opdrachten die voor de datum 27 december 2015 gegeven zijn, gezien worden als rechtsgeldig, ook al ligt de uitvoering na die datum. Deze redenering is echter voor discussie vatbaar en niet zeker is of zo'n lezing ook stand houdt bij de rechter.

De heer vraagt zich af of het coaten van rubbergranulaat geen oplossing is. Vastgesteld wordt dat het in Italië gebruikelijk is het materiaal te coaten. Hiervoor vormen discussies over gezondheid vanuit het verleden een rol. Vastgesteld wordt echter dat de Verordening eisen stelt aan de samenstelling en dat er geen hard bewijs is dat, als er al noemenswaardige migratie plaatsvindt, deze gedurende haar levenscyclus wordt beperkt door de coating. Vraag is ook: hoe wordt het huidcontact vastgesteld: zou bijvoorbeeld een onderlaag van SBR in combinatie met een bovenlaag van kurk wel zijn toegestaan?

De heer verzoekt RecyBEM/VACO voor zover mogelijk referenties in de Position paper te vermelden opdat meer informatie kan worden achterhaald.

5. PUBLICATIE VAN GUIDANCE VAN ECHA

Tijdens de vorige vergadering was de indruk gewekt dat de ETRMA in september 2015 de beschikking zou hebben over een eerste concept van de Guidance van ECHA. Helaas blijkt nu dat deze nog steeds niet beschikbaar is. De heer verwacht dat deze voorafgaande of tijdens het openbare deel van het Caracal-overleg aan de aanwezigen beschikbaar wordt gesteld.

De heer verwacht niet dat er in de Guidance een uitspraak wordt gedaan over wat onder 'direct, langdurig of herhaald kortdurend contact' wordt verstaan. De interpretatie wordt daardoor aan de EU-lidstaten zelf overgelaten.

6. (VOORLOPIG) STANDPUNT VAN DE NEDERLANDSE OVERHEID

- Valdempingstegels
  De vertegenwoordigers van de Nederlandse overheid gaan ervan uit dat de valdempingstegels onder de Verordening zullen vallen.

- Rubbergranulaat van gemalen banden toegepast als infill in kunstgrasvelden
  De heer wijst op de vorige vergadering waarin de heer meedeelde dat als infill niet als voorwerp/artikel gezien zou worden dit wellicht niet onder de Verordening zou vallen. Juristen hebben de heer meegedeeld dat infill niet als voorwerp, zoals bedoeld in de Verordening, gezien wordt. De vertegenwoordigers van de Nederlandse overheid nemen vooralsnog geen standpunt in. Indien de vorm belangrijker is dan de samenstelling is er sprake van een voorwerp; maar men zou ook kunnen stellen dat de vorm van infill niet duidt op een voorwerp. De heer geeft aan dat indien infill niet als voorwerp onder REACH wordt gezien, dat het dan een "mengsel" onder REACH is. Voor mengsels geldt dat indien deze kankerverwekkende stoffen bevatten deze niet aan het grote publiek geleverd mogen worden (entry 28 in REACH Annex XVII).

  Daarnaast wordt het rubbergranulaat niet 'voor levering aan het grote publiek in de handel gebracht', zoals deels wel het geval is bij valdempingstegels. Wel wordt het kunstgrasveld aan het publiek voor gebruik beschikbaar gesteld.

De heer heeft ECHA, naar aanleiding van het vorige overleg, verzocht in dit kader een standpunt in te nemen. Mogelijk dat dit de reden vormt voor de vertraging van het concept van de Guidance.

De heer deelt mee dat de overheid bij het nemen van beslissingen alle zorgvuldigheid in acht wil nemen opdat later hierop niet teruggekomen behoeft te worden. De politiek is op dit punt namelijk zeer gevoelig. Vastgesteld wordt dat er nog geen jurispredentie is.

Overleg tussen de NVWA en ILT moet nog duidelijk maken welke instantie eventueel handhavend gaat optreden als infill onder de verordening valt.

7. INTERNATIONAAL

- Overleg met Europese Commissie op 28 oktober 2015
  De ETRMA heeft op 28 oktober 2015 overleg met de Europese Commissie (DG Grow en DG Env.). Hierbij zijn namens de ETRMA aanwezig vertegenwoordigers van het bureau van de ETRMA, mevrouw vertegenwoordigers vanuit Italië. De bandenbranche in Italië blijkt zich sinds kort ook bewust van de eventuele gevolgen van de REACH Verordening.

  VACO zal de ETRMA Position Paper zodra deze beschikbaar is naar de aanwezigen sturen.

  De Europese Commissie zal de Guidance uiteindelijk vaststellen. De aanwezigen houden er rekening mee dat dit na 27 december 2015 zal plaatsvinden.

- Normcommissie TC217
  De heer deelt mee dat een van de werkgroepen, vallend onder de TC217, op 8 december 2015 bijeenkomt om over deze problematiek van gedachten te wisselen. Tot nu toe hield deze werkgroep zich uitsluitend bezig met uitloging richting bodem, niet met gezondheidsaspecten.

- Caracal-overleg op 12 en 13 november 2015
  Mevrouw contact opnemen met de heer van Cefic over het open toegankelijke deel van het Caracal-overleg op 12 en 13 november 2015.

  Vanuit de overheid zijn hierbij aanwezig de heren en (ministerie van IM). In principe is er tijdens deze vergaderingen vooral aandacht voor de procedure. Mogelijk wordt het concept van de Guidance besproken of uitgereikt om binnen een bepaalde termijn op de inhoud te reageren.

8. RONDVRAAG / WAT VERDER TER TAFEL KOMT

- Handhaving EU Verordening 1272/2013 in Nederland
  Mevrouw deelt mee dat diverse EU-lidstaten niet handhaven als de wetgeving op bepaalde punten onduidelijk is. Zij vraagt hoe de Nederlandse overheid hiermee omgaat. De heer deelt mee dat als er aanleiding is (b.v. als gevolg van een verzoek van derden) er (reactief) gehandhaafd wordt los van het feit of er wel/niet een definitief gepubliceerd richtinggevende Guidance is vastgesteld. De overheid mag immers niet gedogen. De overheid oordeelt op basis van de beschikbare informatie als er geen Guidance is vastgesteld. Tegen een door de overheid opgelegde maatregel kan vanzelfsprekend bezwaar worden gemaakt. De overheid stelt qua handhaving prioriteiten. Zonder goede aanleiding wordt niet tot een handhavingsproject besloten.

- Update informatie vanuit de REACH Helpdesk
  Naar aanleiding van het vorige overleg is het antwoord van de REACH Helpdesk via de heer gewijzigd. VACO heeft verzocht de aangepaste versie in grotere mate te wijzigen. De heer heeft dit verzoek vooralsnog niet gehonoreerd omdat deze voor het RIVM (nog) niet acceptabel was. Besloten wordt dat VACO een iets genuanceerder voorstel doet opdat deze meer slaagkans heeft.

  De heer deelt mee dat de REACH Helpdesk de vragenstellers na het Caracal-overleg opnieuw (actief) zal informeren over de stand van zaken.

De heer heeft contact opgenomen met de REACH Unit in Duitsland. Uit dit contact bleek dat men daar nog geen vragen in dit kader heeft ontvangen en dat dit onderwerp daar blijkbaar nog niet echt leeft.

Er bestaat een Forum bij ECHA waarbij vertegenwoordigers van de overheid (handhavers) internationaal informatie uitwisselen. Echter uiteindelijk bepaalt elke lidstaat zelf hoe zij de wetgeving handhaaft.

De heer dankt de aanwezigen voor de open discussie die tijdens dit overleg heeft mogen plaatsvinden. De heren en danken Granuband voor de gastvrijheid en open wijze van communicatie. De heer dankt de vertegenwoordigers van Granuband voor de gastvrijheid en rondleiding. Tevens dankt hij de aanwezigen voor hun inbreng en open houding tijdens het overleg.

De vertegenwoordigers van de overheid zeggen toe RecyBEM en VACO zo goed mogelijk op de hoogte te houden van de stand van zaken gezien de ernstige consequenties die de Verordening voor de industrie op korte termijn kan hebben.

9. SLUITING

Actielijst			
Nr.	**Omschrijving**	**Actiehouder**	**Gereed**
1.	Position paper aanvullen met informatie over het PAK's gehalte in de afgelopen jaren		Ja / Nee
2.	Informatie uit USA d.d. 20 oktober 2015 naar VACO/aanwezigen sturen.	-	Ja / Nee
3.	Beschikbaar stellen van LCA rubbergranulaat, TPE en EPDM		Ja / Nee
4.	Overzicht maken van verschillende soorten infill met voor- en nadelen		Ja / Nee
5.	ETRMA position paper aan aanwezigen beschikbaar stellen		Ja / Nee
6.	RecyBEM en VACO op hoogte houden van ontwikkelingen	Vertegenwoordigers van de overheid	Ja / Nee

EUROPEAN TYRE & RUBBER manufacturers' association

POSITION PAPER

Brussels, 10 November 2015

Reference document: **CARACAL CACS/40/2015 document (9/11/2015)**
Interpretation of entry 50 of Annex XVII of REACH

- The recycling of end of life tyres (ELT) in Europe is highly successful. In total 3.4 million tons of ELTs are annually collected in Europe of which 1.3 million tonnes are processed (shredded and granulated) for recycling. The main recycling outlets of ELT-derived rubber granulates are rubber tiles/shock-absorbing surfaces and rubber infill/synthetic turf, representing about 50% of all ELT-derived rubber granulates applications.
  - Rubber tiles can be divided in stable-, roof- and gallery tiles, fall damping tiles. Stable-, roof- and gallery tiles are only supplied to professional installers like contractors.
  - Rubber infill is a construction material only supplied to professional artificial turf installers and is not sold to the general public.

- ETRMA fully supports the legal analysis presented by the EU COM (see CARACAL CACS/40/2015 document (9/11/2015)): *"buildings do not constitute "articles" for the purposes of Article 3(3) - so long as they remain fixed to the land on which they stand. The same applies to other large structures such as bridges. Smaller objects affixed to land such as garden swings or garden statuary are probably to be treated in the same way. However, once again, if the objects are removed, then they constitute "articles".Therefore, according to this interpretation and insofar as synthetic turf and rubber tiles/mats that are permanently fixed are considered part of the facility or premises where they have been laid, arguably they will not be "articles" for the purposes of entry 50 of Annex XVII."*

- ETRMA also supports the view that rubber infill used in synthetic turf should be considered as mixture under REACH, and it will fall within the scope of entry 28 of Annex XVII which imposes a limit of 0.01% for benzo(a)pyrene and dibenz(a,h)anthracene and of 0.1 % for other PAHs classified as Carc 1B.

- There is clear evidence that no health risks are associated with playing on artificial turf with ELT rubber infill. This is largely supported by the following studies:

  - A human volunteer study of dermal PAH uptake among football players on an ELT turf pitch was performed in 2006 in the Netherlands and published in a peer reviewed scientific journal[1] The study provides actual bioavailability data on the uptake of PAH through the skin in a real life exposure situation during 2 hours play at a football pitch with ELT infill. This

[1] Joost G. M. van Rooij & Frans J. Jongeneelen. Hydroxypyrene in urine of football players after playing on artificial sports field with tyre crumb infill. Int Arch Occup Environ Health (2010)

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validated study showed that despite the use of a sensitive biomarker (1-hydroxypyrene in urine) **no significant PAH uptake from the rubber infill could be measured.** This conclusion is supported anno 2015 by the Dutch National Institute for Public Health and the Environment (RIVM)[2]

- A re-assessment[3] of the risk from skin contact with rubber tiles taking the ECHA comments on the PAH restriction proposal dossier into account, was conducted using BaP as a marker. It showed that PAH exposure for young children is well below the lowest value of the Derived Minimal Effect Level (DMEL) proposed by ECHA (5 - 550 pg BaP/kg bw/day).

- Municipalities and local authorities are the most important customers for those applications and are currently renewing their (annual) public tenders for 2016. Therefore, the ECHA guidance should urgently clarify that the scope of entry 50.5 does not apply to synthetic turf / artificial sport grounds and shock absorbing surfaces.

- ETRMA further stresses the need to find a balance between circular economy goals and the environmental goals of REACH and to work for a long term solution which guarantees the sustainable use of secondary raw materials in the economy.

[2] Website RIVM 2015. FAQ's on rubbergranulates

[3] 2015, Dr. J. Van Rooij, European Registered Toxicologist, Ceasar Consult B.V., DETAILED HEALTH RISK ASSESSMENT – CHILDREN PLAYGROUND, Reassessment of PAH exposure among children from granulate/tiles of end of life tyres. Annex I of ETRMA Factsheet (dated 28/10/2015)

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EUROPEAN TYRE & RUBBER
manufacturers'association

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Interpretation of Entry 50-5 of Annex XVII of REACH

ELT derived material applications

Presented to the 19th Meeting of the CARACAL on 13.11.2015

REACH Annex XVII Entry 50 -5

'5. Articles shall not be placed on the market for supply to the general public, if any of their rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity, under normal or reasonably foreseeable conditions of use, contain more than 1 mg/kg (0,0001 % by weight of this component) of any of the listed PAHs.

Such articles include amongst others:

— sport equipment such as bicycles, golf clubs, racquets

— household utensils, trolleys, walking frames

— tools for domestic use

— clothing, footwear, gloves and sportswear

— watch-straps, wrist-bands, masks, head-bands

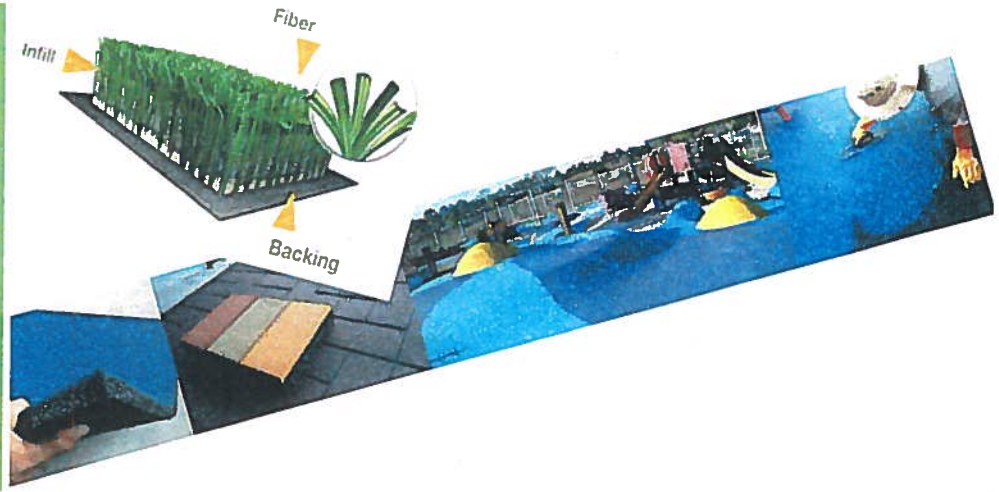
7. By way of derogation from paragraphs 5 and 6, these paragraphs shall not apply to articles placed on the market for the first time before 27 December 2015.

2 - What does entry 50 of annex XVII refer to?

Entry 50 of REACH annex XVII refers to a group of 8 PAHs:

- Benzo(a)pyrene (BaP) - CAS No 50-32-8
- Benzo(e)pyrene (BeP) - CAS No 192-97-2
- Benzo(a)anthracene (BaA) - CAS No 56-55-3
- Chrysen (CHR) - CAS No 218-01-9
- Benzo(b)fluoranthene (BbFA) - CAS No 205-99-2
- Benzo(j)fluoranthene (BjFA) - CAS No 205-82-3
- Benzo(k)fluoranthene (BkFA) - CAS No 207-08-9
- Dibenzo(a, h)anthracene (DBAhA) - CAS No 53-70-3

REACH Annex XVII Entry 50 -5



- **Rubber infill** is a construction material only supplied to professional artificial turf installers, as part of the building and is not sold to the general public.

- **Rubber tiles/mats** can be divided in stable-, roof- and gallery tiles, fall damping tiles. Stable-, roof- and gallery tiles are only supplied to professional installers like contractors

REACH Annex XVII Entry 50 -5

"placing on the market for supply to the general public"

2 interpretations are suggested by EU COM for

1. The restriction on "placing on the market for supply to the general public" does not cover cases where tiles/mats used in public playgrounds and synthetic turf used on artificial sports fields, both made from recycled tyres, are merely made accessible (and not sold) to the public.

2. The restriction on placing on the market for supply to the general public covers the supply of tiles/mats used on public playgrounds and synthetic turf used on artificial sports fields, both made from recycled tyres.

➔ETRMA 's view is that the first interpretation is the most apropriate

Also based on the minutes of the CARACAL meetings: "*SE proposed to replace the whole term by **'foreseen to be used by general public'. COM indicated that changing the wording would entail the risk to include many professional and even industrial products, which would not be proportionate in the context of a measure the main target of which are consumers (general public)."***

REACH Annex XVII Entry 50 -5

Articles or mixtures?

Synthetic turf and rubber tiles/mats:

ETRMA fully supports the legal analysis presented by the EU COM (see CARACAL CACS/40/2015 document (9/11/2015)): *"buildings do not constitute "articles" for the purposes of Article 3(3) - so long as they remain fixed to the land on which they stand. The same applies to other large structures such as bridges. Smaller objects affixed to land such as garden swings or garden statuary are probably to be treated in the same way. However, once again, if the objects are removed, then they constitute "articles".*

Insofar as synthetic turf and rubber tiles/mats that are permanently fixed are considered part of the facility or premises where they have been laid, arguably they will ***not be "articles" for the purposes of entry 50 of Annex XVII."***

Rubber infill used in synthetic turf should be considered **as mixture** under REACH, and it will fall within the scope of entry 28 of Annex XVII which imposes a limit of 0.01% for benzo(a)pyrene and dibenz(a,h)anthracene and of 0.1 % for other PAHs classified as Carc 1B.

NO DEMONSTRATED HEALTH IMPACT

No evidence of demonstrated health concern

- **Shock-absorbing surface -** A 2015 re-assessment of the risk, taking the ECHA comments on migration into account, was conducted using BaP as a marker. It showed that PAH exposure for young children is well below the lowest value of the Derived Minimal Effect Level (DMEL) proposed by ECHA (5 - 550 pg BaP/kg bw/day).

  Reference: 2015, Dr. J. Van Rooij, European Registered Toxicologist, Ceasar Consult B.V., DETAILED HEALTH RISK ASSESSMENT – CHILDREN PLAYGROUND, Reassessment of PAH exposure among children from granulate/tiles of end of life tyres. Annex I of ETRMA Factsheet (dated 28/10/2015)

- **Synthetic turf fields** - A human volunteer study provides evidence that dermal PAH uptake through the skin of football players active during 2 hours play on synthetic turf fields with rubber infill is minimal. This validated study showed that despite the use of a sensitive biomarker (1-hydroxypyrene in urine) **no significant PAH uptake could be measured.**

  Reference: Joost G. M. van Rooij & Frans J. Jongeneelen. Hydroxypyrene in urine of football players after playing on artificial sports field with tyre crumb infill. Int Arch Occup Environ Health (2010).

From a public health perspective there is no clear evidence nor scientific justifications of the need to incorporate synthetic turfs and shock-absorbing surfaces in the scope of the PAHs restriction (REACH Annex XVII 50.5)

URGENCY of CLARIFYING SCOPE of ENTRY 50-5

- **Municipalities and local authorities** are the most important customers for those applications and are currently renewing their (annual) public tenders for 2016.

ECHA/EU COM should urgently:

- **Clarify that the scope of Entry 50.5 does not apply to synthetic turf / artificial sport grounds and shock absorbing surfaces.**

- **Provide a clear definition of prolonged or short-term repetitive contact with human skin or oral cavity** for other applications which might fall under the scope of Entry 50-5.

URGENCY of CLARIFYING SCOPE of ENTRY 50-5

PREMATURE INFO

INFORMATION IS ALREADY CIRCULATING. NEED TO ACT NOW!!!

Source: So.F.teR news "Are you ready for the new REACH restriction?"

New REACH restrictions on PAH to come into effect in December: are you prepared?

The new limits on PAH content will also apply to granules for the infill of artificial turf. SO.F.TER. infill products, always ensuring maximum safety, already comply with these new norms.

On December 27, 2015, the European Regulation n° 1272/2013 will enter into force. After this date it will no longer be possible to manufacture or market inside the territory of the European Union products* with a PAH (Polycyclic Aromatic Hydrocarbons) content in

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NEED TO APPLY A RISK-BASED APPROACH

EU legislator needs to **find a balance between circular economy goals and the environmental goals of REACH** and to work for a long term solution which guarantees the sustainable use of secondary raw materials in the economy by adopting a RISK-BASED approach.