European Trade Union Confederation (ETUC) comments on the amendment of entry 6 (asbestos fibres) of REACH Annex XVII
(May 2014)

1. Scope of the derogation

We have analysed the Commission letter of April 2014 on the interpretation of the derogation in paragraph 1 of entry 6 (asbestos fibres) of REACH Annex XVII and we strongly disagree with the Commission services' view that, on top of the diaphragms containing chrysotile fibres, the scope of the current derogation is also covering the import and use of the chrysotile fibres themselves. Hereunder, we provide our analysis of the original legal text and its amendments over time.

Situation in 1999 (original text):
According to Directive 1999/77/EC adapting to technical progress for the sixth time Annex I to Council Directive 76/769/EEC, the placing on the market and use of all types of asbestos fibres have been banned in Europe since 1 January 2005. However, Directive 1999/77/EC allowed a single derogation for imported diaphragms containing chrysotile asbestos fibres for existing electrolysis cells.

The wording was as follows:

"6.1. The placing on the market and use of these fibres (i.e. crocidolite, amosite, anthophyllite asbestos, actinolite asbestos and tremolite asbestos) and of products containing those fibres shall be prohibited.

6.2. The placing on the market and use of this fiber (i.e. chrysotile) and of products containing this fibre shall be prohibited. However, Member States may except ***diaphragms*** *for existing electrolysis installations until they reach the end of their service life, or until suitable asbestos-free substitutes become available, whichever is the sooner. The Commission will review this derogation before 1 January 2008."*(emphasis added)

The wording of paragraph 6.2 is clear that the derogation is only for the diaphragms containing chrysotile fibres and not for the chrysotile fibres themselves. If the legislator had wanted to except also the placing on the market and use of chrysotile fibres, it would have been explicitly mentioned in the text.

Situation in 2006:
When REACH was adopted by the Parliament and the Council in 2006, the restriction on asbestos was taken over into entry 6 of Annex XVII to REACH. The possibility to grant exemption on diaphragms provided to Member States was rephrased to replace the word "products" by "articles", to add the words "added intentionally" for the fibres contained in articles and to clarify that the derogation concerns *the placing on the market and use* of diaphragms.

The wording was as follow:

"1. The placing on the market and use of these fibres and of articles containing this fibres added intentionally shall be prohibited.

However, Member States may except the placing on the market and use of ***diaphragms containing chrysotile*** *(point (f)) for existing electrolysis installations until they reach the end of their service life, or until suitable asbestos-free substitutes become available, whichever is the sooner. The Commission will review this derogation before 1 January 2008."* (emphasis added)

Again, the wording of paragraph 6.1 is clear that the derogation is not on the fibres but on the diaphragms containing the fibres. If the legislator had wanted to except also the placing on the market and use of chrysotile fibres in the REACH regulation, it would have been explicitly mentioned in the text.

Situation since 2009:
From 1 June 2009, REACH Regulation repealed and replaced Directive 76/769/EEC and Annex XVII of REACH replaced Annex I to Directive 76/769/EEC. The terminology for the different entries in Annex XVII had to be harmonised and made coherent with REACH definitions and some clarifications had to be made to allow operators and enforcement authorities to apply all Annex XVII restrictions correctly. Those technical amendments of Annex XVII have been introduced through Commission Regulation (EC) No 552/2009 which gives the latest version for the asbestos derogation in Annex XVII.

The wording is as follow:

"1. The manufacture, placing on the market and use of these fibres and of articles containing these fibres added intentionally is prohibited.

However, Member States may exempt the placing on the market and use of ***diaphragms containing chrysotile*** *(point (f)) for existing electrolysis installations until they reach the end of their service life, or until suitable asbestos-free substitutes become available, whichever is the sooner.*

By 1 June 2011 Member States making use of this exemption shall provide a report to the Commission on the availability of asbestos free substitutes for electrolysis installations and the efforts undertaken to develop such alternatives, on the protection of the health of workers in the installations, on the source and quantities of chrysotile, on the source and quantities of diaphragms containing chrysotile, and the envisaged date of the end of the exemption. The Commission shall make this information publicly available.

Following receipt of those reports, the Commission shall request the Agency to prepare a dossier in accordance with Article 69 with a view to prohibit the placing on the market and use of diaphragms containing chrysotile."(emphasis added)

Again, the second sub-paragraph of paragraph 1 (wording identical to the text adopted in 2006 by the Parliament and the Council) is clear that the derogation is only for the diaphragms containing chrysotile fibres and not for the chrysotile fibres themselves.

The fact that the reporting obligation in the 3rd sub-paragraph of paragraph 1 covers "[on] the source and quantities of chrysotile, [on] the source and quantities of diaphragm containing chrysotile" cannot be interpreted in the sense that the import and use of asbestos fibres is allowed. If this would be the case, it would have been mentioned clearly and explicitly in the second sub-paragraph of paragraph 1 describing the scope of the derogation.

This is corroborated by the European Court of Justice judgment of 7 March 2013 (case C-358/11) which says: that " …***derogation from restrictions under REACH are exceptional and must be interpreted strictly***"

The ECHA's proposal (see Annex XV report) to extend the scope of the asbestos derogation in REACH Annex XVII to the chrysotile fibres themselves is therefore not in line both with the current text of the derogation and all the previous wordings of that exemption (i.e. Directive 1999/77/EC, REACH text adopted by the Parliament and Council in 2006)

Moreover, extending the scope of the derogation to allow the import of the chrysotile fibres is not necessary according to the following information in the ECHA's Annex XV report (see pages 35 & 36):

a) For AAK:

"*Projected use*
AAK uses chrysotile in hydrogen production. Based on previous experience, it would need to refurbish its equipment and import cells with diaphragms containing chrysotile again in 2020/21. However, as a result of increasing maintenance and reliability issues, AAK has decided to replace its electrolysis-based hydrogen production with a chrysotile-free hydrogen production method. The two existing electrolysis units containing chrysotile will be used until the new production method is in place, by 2025 at the latest. ***There is no need for further imports of chrysotile***" (emphasis added)

b) For Dow:

"*Projected use*
Dow uses chrysotile in the production of chlorine, which in turn is used as feed stock/raw material in an integrated production system at the site. The total stock of chrysotile contained within the Dow electrolysis installation is about 270 tonnes. Each year, Dow replaces about 10% of the diaphragms, containing about 21 tonnes of chrysotile, and uses about 50 tonnes of chrysotile fibres for maintenance of the diaphragms. Both chrysotile and the diaphragms containing chrysotile are imported. ***Dow has recently purchased a large stock of chrysotile fibres and has (at the time of writing of this report) about 540 tonnes stored at the Stade site. With current***

use, this stock would permit the maintenance of the existing diaphragms for over 10 years." (emphasis added)

In conclusion, extending the scope of the asbestos derogation (entry 6 of REACH Annex XVII) to also allow the placing on the market of chrysotile fibres is far from being a minor modification to the existing restriction. If that amendment is adopted, it will make legal the import of asbestos fibres which is currently illegal in the REACH regulation. In addition, that extension is not necessary since AKK does not need to import chrysotile fibres and Dow Stade has already imported enough chrysotile fibres to permit over 10 years functioning of its diaphragms.

2. Risks to human health

In the ECHA's annex XV report, the estimation of the risks associated with the exposure of workers to asbestos fibres in the context of the amendment of the existing restriction is not comprehensive. The exposure and the cancer risk levels are estimated for the workers operating the electrolysis installations in Sweden and in Germany. However, the estimation of the risks associated with the exposure of workers to asbestos in the production/mining phase of the chrysotile fibres, in the manufacture of the diaphragms containing the chrysotile fibres and their transport are missing. These are important elements to be taken into account. According to the Guidance for the preparation of an Annex XV dossier for restriction, the report is supposed to "*Document the available information on manufacture, import, export and uses of the substance on its own, in preparation or in articles. Describe all stages of the life-cycle of the substance resulting from the manufacture and uses."*

3. Available information on alternatives

The industrial-scale production of chlorine and caustic soda is carried out by means of one the following different electrolysis processes: membrane electrolysis, amalgam electrolysis or diaphragm electrolysis. The latter two technologies are outdated and no longer used in new plants due to their high energy consumption and for environmental reasons.

The membrane process is the state-of-the-art technology for chlor-alkali production. The process is not just energy-efficient, it is environment-friendly and extremely safe. The great majority of firms in the chlor-alkali sector have already taken steps to modify their technology and to use electrolysis cells operating with membranes.

In the early 90's, non-asbestos diaphragms have become available for relatively simple replacement in asbestos diaphragm cell plants. The diaphragms can still be used, replacing the asbestos with other substances like Polyramix®or Tephram®. PPG industries (a major producer of chlorine in the US) have been leader in the development of non-asbestos "Tephram" diaphragm. In 2010, PPG industries have

replaced non-asbestos Tephram diaphragms in all their asbestos diaphragm-cell units[1].

Today, De Nora (former Eltech company) is marketing Polyramix PMX®, a non-asbestos technology for replacement of asbestos in diaphragms[2]. This solution is claimed to provide many benefits in diaphragm cells (non-polluting and non-hazardous, long operating commercial lives (over 11 years), requires only minor modification to existing diaphragm)

However, the general industry trends, is towards replacing diaphragm with membrane electrolysis cells[3]. De Nora is also one of the firms proposing that technology[4]

According to the ECHA's Annex XV report (section C), Dow considers all these alternative production methodologies technically feasible but unprofitable (not economically feasible) in Dow's facility. Two main reasons are mentioned: the high investment costs and higher energy consuming processes if the alternatives were to be implemented.

These arguments can be challenged based on the following facts. Most (non-asbestos) membrane plants operate on the same voltage as those using the asbestos diaphragm technology. Plants where a substitution has been made have experienced no significant increase in energy consumption per tonne produced. The industry organization Belgochlor cites as one of the benefits of membrane technology that the process affords "low energy consumption, akin to that of diaphragm cells"[5].
The evidence of information collected is that all the plants - whether diaphragm or membrane cell - in practice operate on very similar voltages varying between 3.2 and 4 volts. The differences depend not on the technology used (diaphragm or membrane) but on other factors like the saturated brine concentration (usually about 300-315 g/l), temperature (normally 85°-98°) and, as mentioned in the Annex XV report, current density. Variations in current density are not determined by the use of a particular technology. Membrane cells at Solvay's Rheinberg facility operate at the same current density as asbestos diaphragm installations at Dow's Stade plant. One specific feature of membrane technology is to enable lower energy consumption. Using oxygen depolarized cathodes (ODC) in chlor-alkali electrolysis can reduce cell resistance by approximately 1 volt, reflected in substantial energy savings.

Also it is worth mentioning that Dow Chemical has switched to membrane technology for chlorine production in its US facilities[6,7]. It can therefore be

[1] http://www.ppg.com/en/newsroom/news/Pages/20100318B.aspx
[2] http://www.denora.com/Products/ChlorAlkali/DiaphragmTechnology.aspx

[3] See in annex the excerpted from testimony of Barry Castlemen, ScD, Environmental Consulstant, before the U.S. Senate Cttee on Environment and Public Works, June 12, 2007
[4] http://www.denora.com/Products/ChlorAlkali/MembraneTechnology.aspx
[5] http://www.societechimiquedefrance.fr/extras/Donnees/mine/cl/livre%20blanc%20du%20chlore.pdf
[6] http://www.dow.com/news/corporate/2010/20100701a.htm

concluded that alternative technology to replace chlorine production with asbestos diaphragms is technically feasible and economically viable for Dow.

4. Justification why the proposed restriction is the most appropriate Union-wide measure

Five options have been identified in the Annex XV report to change the current regulation of chrysotile. Options 1, 2 and 3 propose to continue the current derogation for 10 years. In addition they would make explicit that the import of fibres for maintaining diaphragms is allowed. This would be an extension of the scope of the current derogation which only allows the import of the diaphragms containing the chrysotile fibres.

Given the availability of technically suitable asbestos-free alternatives on the market which are economically viable for the two last companies using outdated asbestos diaphragm technologies in Europe (i.e. AAK is ready for phasing-out and Dow uses asbestos-free membrane technologies for chlorine production in its US plants) there is no valid reason to extend the derogation for 10 years. Also extending the scope of the derogation to permit the import of asbestos fibres (a highly political issue) is not necessary for AAK (AAK only use the diaphragms containing the fibres) nor for Dow (Dow has already imported enough chrysotile fibres for 10 years operation). Therefore option 1, 2 and 3 should be redrafted to take those elements into account before being compared with the two remaining options.

On the two remaining options, option 5 would maintain the current entry in Annex XVII but require companies to apply for an authorization for continued use under the assumption that chrysotile would be added to the Authorisation list. Although this options has several advantages (burden of proof on the companies applying for substitution, strong incentive to substitute, more cost-effective option than a tailor-made restriction for 2 companies only in the EU, etc…), the main disadvantage is that the importation of diaphragms containing chrysotile would not be regulated, as the authorisation requirement does not apply to imported articles. Option 5 has therefore been abandoned by ECHA.

Option 4 would end the current derogation immediately (after the necessary legislative changes have been made) and ban all existing uses of chrysotile in diaphragms.

We believe this is the best option for the following reasons:

1) This would be finally in line with the European Union's commitment to a global asbestos ban. It is indeed incoherent to ask other countries to halt their exports of asbestos while continuing to import articles containing asbestos fibres or asbestos fibres themselves.

[7] http://www.dow.com/news/press-releases/article/?id=6470

2) This would be in line with the demands of the European Parliament outlined in the resolution adopted in March 2013 with a large majority of MEPs (558 for, 51 against, 5 abstentions). In that resolution[8], the EC is asked to address the unacceptable dumping of asbestos on developing countries when trade agreements are being discussed, in particular at the WTO and to exert diplomatic and financial pressure on asbestos exporting countries to shut down asbestos mining industries [….]. More specifically, the European Parliament called on the Commission to review progress on the development of chrysotile-free diaphragms used in electrolysis installations, in accordance with REACH, Annex XVII, Part 6 and to ensure that substitution takes place [….] The European Parliaments condemns European financial investment in global asbestos industries [….]

3) This would be a strong incentive to force the 2 remaining companies to speed up the substitution towards asbestos-free production systems. Given legislative time before the entry into force of a total ban of the existing uses of chrysotile, AAK and Dow would still have a few years to adapt. It is worth recalling that 15 years ago, Directive 1999/77 already provided a provisional derogation to avoid unnecessary delaying the asbestos ban and gave firms that used asbestos diaphragms in electrolysis cells an extra three years over the firms that were using asbestos in different production processes. In 2004, even before Directive 1999/77 had entered into force, chlor-alkali production in asbestos diaphragm cells had fallen to no more than 17,4% of total EU production[9]. Most European groups –like Rhodia, BASF, Bayer, Akzo Nobel, Akerma do not use asbestos diaphragms technology.

4) There is no doubt that different technically feasible alternatives are currently available on the market and that some of them are economically viable for both AAK and Dow (i.e. Dow uses membrane technologies for chlorine production in its US plants). In addition, both companies are developing their own preferred substitutes. AAK plans to be ready to replace its current aging chrysotile-based technology in 5 years at the earliest. Dow claims to need 10 years to substitute chrysotile completely. However, as Dow recognizes that a binding regulation is the major driver of their search for a chrysotile substitute (see page 39 Annex XV report), we believe that putting an end to the asbestos derogation in REACH Annex XVII can only speed up the implementation of the alternatives under development.

5) Additionally, maintaining the derogation hampers the application of the Integrated Pollution Prevention and Control Directive 96/61/EC of 24 September 1996, which requires the use of the "best available

[8] *European Parliament resolution of 14 March 2013 on asbestos related occupational health threats and prospects for abolishing all existing asbestos* (2012/2065(INI).
http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P7-TA-2013-0093+0+DOC+XML+V0//EN&language=EN

[9] Eurochlor, Chlorine industry review 2004-2005, Ensuring a sustainable future by building trust and confidence, Brussels, 2005

techniques"(BAT). Asbestos diaphragm (and mercury) processes are clearly excluded as BAT[10].

5. Conclusions

We believe that the period of adjustment provided for by the original Directive 1999/77/EC and extended when the derogation was taken over into REACH must now end. We call on the Commission and the Member States who together will have the final decision on the amendments to the asbestos restriction in REACH Annex XVII to comply with the criterion laid down in the Directive that the derogation must end when "suitable asbestos-free substitutes become available".
Fifteen years later, there is no doubt that suitable substitutes are available on the market. Some are technically feasible and economically viable for the two last companies who still use asbestos diaphragms processes (recognized as non-Best Available Technique) in Europe. Given the legislative time before entry into force of the total ban of asbestos in the EU, these two companies will have a few years extra time to switch to their preferred substitute. The end of the asbestos derogation will also be in line with the EU's commitment on a global ban on asbestos and the resolution on asbestos adopted in 2013 by the European Parliament.

[10] http://www.eurochlor.org/media/70861/2013-annualreview-final.pdf

Annex: Excerpted from **Testimony of Barry Castleman, ScD, Environmental Consultant, before the U.S. Senate Committee on Environment and Public Works, June 12, 2007**

Asbestos Exposure in Chlorine Manufacturing

Asbestos has long been used in the diaphragm-cell process for making chlorine. This process and the old mercury-cell process are still operated, although a newer and more environmentally and technically superior membrane-cell process has been the only type built anywhere in the world for the past 20 years. Some diaphragm and mercury cell plants have been converted to membrane cells. Power requirements are substantial for chlorine manufacture, and the membrane cell process requires 15-20% less energy than diaphragm cells.

Asbestos exposures in the chlorine industry arise from transport and storage of sacks of asbestos, typically involving tears in the sacks that must be identified and sealed, with spillage cleaned with high-efficiency vacuum filters. Cutting open and emptying sacks of asbestos and transferring asbestos into slurry mixing tanks can cause additional exposures. The empty sacks are an additional exposure source, they must be carefully gathered up, placed in sealed containers, and landfilled at approved sites. Storage and handling of partially used sacks are also sources of exposure. If the slurry is spilled, this has to be meticulously cleaned up right away, because once it dries it becomes a source of airborne asbestos exposure. Handling and storage of prepared or purchased pre-deposited asbestos diaphragms can cause additional exposures. Hydro-blasting for removal/replacement of asbestos diaphragms is another possible source of area contamination, drying, and airborne exposure. The water used for hydro-blasting has to be contained and the asbestos filtered from it. The waste asbestos from this water and the spent diaphragms have to go to a landfill that accepts asbestos.

To some degree, workers can be protected against these asbestos exposures if they wear respirators that will remove some of the asbestos from the air they breathe, and if they wear personal protective clothing such as disposable coveralls. But these safeguards are partial. The respirators must be fit-tested and properly maintained; and even the protective clothing is a hazardous waste that requires special precautions for disposal. Chlorine Institute pamphlet 137, *Guidelines: Asbestos Handling for the Chlor-Alkali Industry*, recommends personal protective clothing and respirators only for workers exposed in excess of the permitted limits in the OSHA standard, which is all that is legally required. But OSHA has admitted that compliance with its limits will not fully prevent deaths from asbestos. Dr. Richard Lemen and NIOSH epidemiologists estimate that exposure at OSHA's permissible exposure limit for asbestos will still cause 5 deaths from lung cancer and 2 deaths from asbestosis in every 1000 workers exposed for a working lifetime. (L. Stayner et al., Exposure-Response Analysis of Risk of Respiratory Disease Associated with Occupational Exposure to Chrysotile Asbestos. *Occ. Env. Med.* 54: 646-652, 1997).

While company manuals may state that the workers are supposed to observe various precautions to minimize asbestos exposure, there is virtually no OSHA inspection of these workplaces, and the usual combination of production demands, Gulf coast heat and humidity, and carelessness will assure that things are not always done "by the book" to minimize workers' asbestos exposure.

In the past 15-20 years, non-asbestos diaphragms have become available for relatively simple replacement in asbestos diaphragm cell plants. These are sold by Eltech/DeNora and PPG Industries in the US. The non-asbestos diaphragms cost more and last longer than asbestos. Although two-thirds of the chlorine made in the US in 2006 was from diaphragm cells, I don't know how many of these used non-asbestos diaphragms. The technology continues to advance, however, and has had wide acceptance in Europe, where the European Union's temporary exemption allowing asbestos use in chlorine manufacturing comes up for reconsideration next year. I understand that there are only 3 chlorine plants in Europe still using asbestos diaphragms.

PPG Industries has been a leader in the development of non-asbestos "Tephram" diaphragms, and PPG is also a major producer of chlorine in the US. I understand that PPG regularly replaces non-asbestos Tephram diaphragms in its asbestos diaphragm-cell units when they are taken down for periodic maintenance. I do not know of any technical reasons why other diaphragm-cell chlorine manufacturers could not do the same thing.

Therefore, if chlorine manufacturers want extra time to convert to non-asbestos technology, perhaps that could be allowed but with the requirement that when the equipment is shut down for maintenance overhauls, the new diaphragms used be non-asbestos. A similar several-year time frame might be allowed for diaphragm-cell units that manufacturers want to convert to membrane cells.