The European Association of the Electricity Transmission and Distribution Equipment and Services Industry

POSITION PAPER

1 June 2018

Safe use of Anhydrides in the production of electricity transmission & distribution equipment

Position against the inclusion of anhydrides in REACH Annex XIV

Executive summary:

T&D Europe welcomes and supports the overall strategy of the REACH Regulation EG 1907/2006 in ensuring a high level of protection of human health and the environment and in encouraging the replacement of substances of high concern by less dangerous substances or technologies where suitable and economically available. However, the REACH process must ensure that decisions to take substances under authorization are based on existing and not on outdated worker's health protection measures and occupational conditions.

The Anhydrides Joint Industry Taskforce (AJIT) is an initiative of the entire anhydrides value chain (producers, formulators, downstream users) to gather information on the current exposure, risks and socio-economic impact associated with the use of Anhydrides HHPA and MHHPA. T&D Europe companies are downstream users and were under the founders of this consortium. Meanwhile several surveys and studies were performed under the umbrella of AJIT resulting among others in a report on the socio-economic impact[1], an exposure and medical inventory report[2] and a worker training program[3].

Based on these results, the position of T&D Europe is as follows:

- After more than 16 years of epoxy production using anhydrides, there is no evidence of occupational asthma amongst the workers examined in AJIT plants operated by T&D Europe companies. T&D Europe cannot support the claim in the draft prioritisation that the Anhydrides have an equivalent concern as other hazardous substances classified under CMR[4].
- The Anhydrides have only industrial and no professional or consumer use. Therefore, their impact can be effectively controlled. European factories comply with EHS routines (environment, health and safety) and have improved working conditions tremendously in

[1] AJIT Public Consultation Report 16-2-2016 http://anhydrides.eu/report-5592-lobortis-neque-rhoncus-eget/
[2] AJIT Exposure and Medical Inventory Report 26-8-2016 http://anhydrides.eu/eamir/
[3] AJIT Training program, available upon request
[4] CMR : carcinogenic, mutagenic or toxic for reproduction

T&D Europe aisbl
BluePoint Building
Boulevard A. Reyers 80
1030 Brussels - Belgium
+32 2 206 68 67
secretariat@tdeurope.eu
www.tdeurope.eu
T&D Europe is registered under the European Union 'Transparency Register'
ID number 90453504235-64 **VAT** BE 0898 208 617

the last 10 years. The Annex XV dossier for the Anhydrides is based on outdated information collected from work places in the 90's.

- Substitutes for Anhydrides are not in sight and if so, alternatives most likely have the same sensitizing properties. Since the related T&D products need long development time to satisfy the expectations of customers in the electricity network regarding a durability of 40 years and high reliability, T&D Europe is afraid that production of solid epoxy parts will be relocated outside the EU.
- T&D Europe believes that the anhydrides MHHPA and HHPA should not be prioritized and placed on the Authorization List[5]. The operation of a plant is a long-term decision, whereas authorisation is only provided for a fixed period of time after which it has to be renewed. Any investments in improved work place conditions might be nullified when an authorization is not renewed.
- To ensure workers' health safety all over the EU, T&D Europe supports that low-level concentrations of air-borne Anhydrides at work places are institutionalized.
- Through a voluntary commitment[6] of all AJIT members, the industry members of T&D Europe are further intensifying their risk management measures in handling chemical substances and protecting workers. AJIT is surveying the implementation of the voluntary commitment. In addition, AJIT is working with academic partners to establish reliable measurement methods for air-borne anhydrides. However, more time is needed to accomplish these investigations.

T&D Europe is willing to continue to cooperate with the authorities and is available for any further information on the use of anhydrides in electricity transmission and distribution equipment.

Annex: detailed information

[5] 9th draft recommendation of ECHA due middle of 2018
[6] AJIT Voluntary Commitment Progress Report 30-10-2017 http://anhydrides.eu/voluntary-commitment-report-2017/

ANNEX

Anhydrides in REACH

The Anhydrides MHHPA and HHPA[7] have been classified as respiratory sensitizers according to the CLP (Classification, Labelling and Packaging) regulation (EC) No 1272/2008. This sensitization might induce occupational asthma and inflammation of conjunctiva.

Following the process prescribed by REACH regulation (EC) No 1907/2006 for hazardous substances, these anhydrides were included in the Candidate List based on an Annex XV dossier submitted by the Netherlands in 2012. In November 2015, they were proposed by the European Agency ECHA to become subject to authorisation and/or EU-wide supply and use restrictions (7th draft recommendation). Since during the public consultation there was no evidence found for other than industrial use of these Anhydrides, the registrants updated the Anhydrides registration dossier with an advice against professional use. This clarification led to a decrease of the scoring and ECHA removed the Anhydrides from the 7th recommendation. Currently the scoring of anhydrides is on par with several other substances which might be prioritised in the 9th draft recommendation of ECHA.

Application of anhydrides in T&D Europe products

The anhydrides MHHPA and HHPA are used as epoxy hardeners in the casting of solid-insulating parts required for high voltage switchgear and equipment. For T&D Europe companies these insulating parts are so critical with regard to function that they run own epoxy casting plants for these components. Typical examples are cast-resin distribution transformers, transformer bushings, wall bushings, instrument transformers and cable terminations used in electrical switchgear for transmission and distribution networks. In addition to that, anhydrides are extensively used by other industrial sectors in the insulation of windings of all kinds of rotating machines, such as electrical motors and power generators. Authorization would affect the production of these products in Europe with a potential loss of thousands of work places and billions of turnover.

Electrical switchgear as part of the power grid ensures a reliable supply of electricity for society and industry. Switchgear is designed in terms of compactness, insensitivity to environmental conditions, low maintenance, energy efficiency and low environmental impact.

On approximately 10000 tonnes of HHPA and MHHPA used per year (which is the reason for the high score applicable for prioritisation) the majority is used as intermediate, which is exempted from authorization under REACH.

Substitutes for Anhydrides

Substitutes for Anhydrides include other epoxy hardeners and latent catalysts. Companies have experimented with these, but could not obtain sufficient process capability/stability. The required combination of mechanical, thermal, and electrical resistance and/or durability required for outdoor use could not be achieved.

The Anhydrides HHPA and MHHPA impart superior properties to the epoxy material because of their high level of reactivity. This reactivity is also the cause for their sensitising properties. Substitutes of anhydrides delivering similar performance are likely to be sensitizers as well. If a

[7] In fact, 7 slightly different substances are grouped under these two Anhydrides

substitute is found, technology must be duly proven before being put on the market in particular proving the absence of long term aging effects during the anticipated product life of about 40 years. Expenses will arise to cover the R&D costs, qualifications for special customers and other certifications. Heavy investments will be necessary to adapt the manufacturing process.

Socio-Economic considerations

The socio-economic impact of discontinued use of Anhydrides would be substantial for European companies. A conservative estimate is that 1.9 billion euro[8] is added to EU GDP by the use of these substances all over Europe with a significant contribution in the scope of T&D Europe companies[9]. A considerable part of this GDP would disappear as the majority of companies would either relocate (54%) or close down (24%).

The effect on employment would be severe in the event of discontinued use of Anhydrides, in particular if the production of rotating machines were discontinued. Though the number of workers directly exposed to Anhydrides on the factory floor is rather small, the impact on support functions (administration, sales, etc.) and other jobs would be significant as the use of Anhydrides is an indispensable step in a long production line/value chain.

T&D Europe companies need the Anhydrides to ensure the quality, long life and high reliability of their products used in electrical switchgear for transmission and distribution networks. If the anhydrides are out-phased the risk of a reduced operation stability and increased outage might result, in particular since these epoxy components are applied in outdoor installations subject to severe climatic conditions, sun radiation and rain.

Findings of the Anhydrides Joint Industry Taskforce (AJIT)

The Anhydrides Joint Industry Taskforce (AJIT) is an initiative of the entire anhydrides value chain (producers, formulators, downstream users) to gather information on the current exposure, risks and socio-economic impact associated with the use of Anhydrides and to inform authorities concerning the safe use of anhydrides. T&D Europe companies are downstream users and were under the founders of this consortium as well as the industry association T&D Europe.

The risk of sensitization by anhydrides in European factories today has decreased drastically compared to the status described in the Annex XV dossier of the Anhydrides (based on data collected in the 80's, 90's and early 2000) due to the implementation of risk management procedures prescribed in the material safety data sheets and local occupational health and safety regulations. Modern and automated equipment is used more and more with closed vessel systems for the mixture of anhydrides, resin and filler material. The emission of free anhydrides into the environment is avoided as far as feasible thanks to, for example, injection processes in closed casting systems.

All members of the AJIT collected their annual quantities, made exposure measurements at work places in line with a methodology worked out by AJIT, collected medical evidence and elaborated

[8]These figures are reported by AJIT member companies and may easily be exceeded by a factor of 2 or more considering all downstream users of Anhydrides.
[9] AJIT Public Consultation Report 16-2-2016 http://anhydrides.eu/report-5592-lobortis-neque-rhoncus-eget/

the contributing scenarios of their production systems. The results were summarized by the consortium leader PCE[10] in a socio-economic report[11] and submitted in 2016.

The Exposure and Medical Inventory Report[12] gathers results from 13 plants occupying 365 workers in epoxy production. It shows that after 16 years of epoxy production using anhydrides there is no evidence of occupational asthma related to anhydrides. In plants operated by T&D Europe companies no single health case was detected amongst the examined 74 workers. In plants where rotational machines are produced and where partly much higher Anhydride exposures were measured, 4 cases could be identified in one plant. In 2 cases symptoms disappeared after removal from exposure. In the 2 other cases, workers could have developed asthma even without exposure to anhydrides, as these workers had a severely atopic constitution.

Exposure to Anhydrides is limited and controlled during T&D equipment manufacturing process. Only a limited number of employees are exposed to concerned anhydrides in working environments. No secondary exposure exists, since the anhydrides are used only in industrial applications and not in consumer articles. Final finished products contain free anhydrides well below 0.1 % and are safe. European plants complying with EHS routines (environment, health and safety) have improved tremendously work place conditions in the last 10 years and implemented measures such as ventilation of work places, skilled workers, or closed casting systems.

As of yet the AJIT has not found any evidence to support the claim in the draft prioritisation that the Anhydrides have an equivalent concern as other hazardous substances classified under CMR with much higher impact on the general public.

AJIT initiatives for responsible use of Anhydrides

T&D Europe supports the activities of the AJIT. Such a consortium brings together all stakeholders (producers, formulators, and downstream users) and shares information and best practices in production and use, which is otherwise not disclosed.

- 21 AJIT member companies signed a voluntary commitment[13] whereby they agreed to:
  - Incorporate a Medical Diagnostic Guideline into the annual medical surveillance;
  - Develop and implement an exposure minimisation plan per plant;
  - Implement a worker training program created by AJIT.
- The absence of a commonly accepted standardised method for measuring air-borne Anhydride concentration is a problem, which the AJIT together with its association members is trying to resolve by selecting the best available method.

Currently available measurements in epoxy plants showed concentrations of Anhydrides in closed casting processes at the detection limit and higher concentrations up to 70 µg/m^3 in open casting processes. By first investments in the framework of the Voluntary Commitment, a reduction of the exposure has been already proven.

The AJIT is convinced that compliance with the British Thoracic Society Standards of Care Guidelines for Occupational Asthma is sufficient along with exposure reduction programs to

[10] PCE: Polymer Comply Europe
[11] AJIT Public Consultation Report 16-2-2016 http://anhydrides.eu/report-5592-lobortis-neque-rhoncus-eget/
[12] AJIT Exposure and Medical Inventory Report 26-8-2016 http://anhydrides.eu/eamir/
[13] AJIT Voluntary Commitment Progress Report 30-10-2017 http://anhydrides.eu/voluntary-commitment-report-2017/

eliminate any risk of health damage associated with the use of Anhydrides in plants. Registrants have already updated the registration dossiers of the Anhydrides with recommendations to apply best practice in production and to reduce exposures to a safe level.

T&D Europe hopes this information will allow authorities, in consultation with industry, to find an alternative regulatory option to authorization which is more efficient, appropriate, and expedient to address the risk associated with the use of HHPA and MHHPA, such as:

- Implementation of risk management options specifying maximum exposure thresholds, introducing best practices in production processes and/or health monitoring;
- Consideration of an EU wide directive on safety and health at work (e.g. OEL).