



European Semiconductor Industry Association

## **ESIA Text Response to ECHA Online Consultation – Call for evidence on lead and its compounds , related to scientific evaluation of health-based exposure limits at the workplace.**

Brussels, June 5 2019

<https://echa.europa.eu/oels-cce-current-consultation/-/substance-rev/23202/term>

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ESIA would support revising the existing EU binding occupational exposure limits for lead and that the regulatory concerns with lead and potential worker exposure in some sectors should be addressed through updating the Chemical Agents Directive to manage the occupational risk appropriately. ESIA would suggest that lead metal and lead compounds are proportionally more effectively regulated and managed through targeted REACH restrictions for sectors where lead exposure and content may be deemed a risk, in combination with updating the existing workplace binding occupational and biological exposure limits.

The European semiconductor industry has been working on technical lead issues with programmes for managing and seeking replacements for lead use in semiconductors since the early 2000's through the E3 initiative and the Die Attach 5 Project. Europe was the leader in the worldwide management of lead in electronics through the EU's Restriction of the use of Hazardous Substances in electrical and electronic equipment (RoHS) which was adopted in 2002 and the ban on lead and other substances entered into force in July 2006. This directive was further revised in 2011. RoHS is now actively mirrored in over 40 jurisdictions worldwide. The RoHS directive thus has fostered a substitution of lead in electronics globally that has begun many years ago. Specific exemptions are in place for specific applications where lead substitution is currently not possible. These exemptions are regularly reviewed by the EU commission and stakeholders have to apply for renewals providing detailed technical dossier justifications. There are very limited lead uses remaining compared to early 2000s. Industry is actively working on evaluating potential alternative materials.

Lead in metal form is used in limited quantities as an essential solder alloy in some semiconductors to meet the technical functionalities required of the respective semiconductors (microchip) and their performance applications. Generally, semiconductors are integrated into electronic systems into many industry sectors (including; lighting, intelligent transport systems, smart grids, renewable energy technologies, industrial tools, automotive, aviation, computing, consumer electronics,

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encryption security and smart cards etc.) Many of these applications where lead is necessary, provide significant environmental benefit in the final sector application.

Lead oxides - Low Temperature (Low-T) lead-monoxide based glass frits are used in semiconductor manufacturing, in the area of hermetically sealing microelectronic devices and in wafer-to-wafer bonding process of MEMS (Micro Electro-Mechanical Systems) devices, due to its unique thermal characteristics. Lead monoxide is among the constituents of the formulation of a (Low-T) melting glass (i.e. the glass component in the glass frit paste). Lead monoxide lowers the melting temperature of the glass technically required for the compatibility with subsequent process.

Semiconductors (microchip) are normally encased in a resin cast and integrated into electronic equipment or electronic systems. Where lead is used for the manufacturing of semiconductors, appropriate measures are in place in semiconductor factories controlling the potential exposure to workers. Workplace monitoring is also performed in order to ensure compliance to the applicable workplace binding occupational and biological exposure limits. Any potential exposure is controlled with a workplace environment applying strict risk management measures. Manufacturing equipment tool design minimizes risks to workers during normal operation and maintenance procedures are in place to prevent employees' exposure. Local exhaust ventilation (LEV) is installed. Chemical Industrial hygiene monitoring are performed regularly in the working areas ensuring all results below applicable threshold limit values, (TLVs) therefore risk for workers is duly controlled.

Lead exposure is already highly regulated in the EU through substance-specific legislation covering many sectors and products including manufacture, use, and end-of-life/waste such as, batteries, RoHS, end of life vehicles, occupational safety, air quality and lead emissions, toys and packaging. Side by side legislation with different criteria and procedures focusing on substances and on the same sector will not assist in the EU's environmental protection goals. The presence of lead in articles is already clear and available with much legislation in place

#### **About ESIA**

The European Semiconductor Industry Association (ESIA) is the voice of the Semiconductor Industry in Europe. Its mission is to represent and promote the common interests of the Europe-based semiconductor industry towards the European Institutions and stakeholders in order to ensure a sustainable business environment and foster its global competitiveness. As a provider of key enabling technologies the industry creates innovative solutions for industrial development, contributing to economic growth and responding to major societal challenges. Being ranked as the most R&D intensive sector by the European Commission, the European Semiconductor ecosystem supports approx. 200.000 jobs directly and up to 1.000.000 induced jobs in systems, applications and services in Europe. Overall, micro- and nano-electronics enable the generation of at least 10% of GDP in Europe and the world.