LAS CAS 68411-30-3:

This message is regarding a linear alkylbenzene sulfonate (LAS) product CAS 68411-30-3 that is categorized as a priority chemical on the Domestic Substance List. The message is being sent on behalf of CEPSA Quimica, S.A., a Spanish company that is a world leader in linear alkylbenzene (LAB) production, with an LAB plant in Canada (Bécancour – Québec). The main use for LAB is production of linear alkylbenzene sulfonate (LAS), a major cleaning agent (surfactant) used in laundry and cleaning products in Canada and worldwide.

In providing this information on LAS, CEPSA is supported by CLER, the Council for LAB/LAS Environmental Research, an organization of scientists and technical specialists representing manufacturers of linear alkylbenzene (LAB) and linear alkylbenzene sulfonate (LAS). CLER's mission is to conduct research and distribute scientific information on the environmental and human safety of these materials.

LAS is an extremely well documented product, with extensive data available from an OECD SIDS Assessment Report (http://www.chem.unep.ch/irptc/sids/oecdsids/LAS.pdf, OECD 2005). Based on this data, we are providing the following information with the request that the information be used to update the categorization of LAS CAS 68411-30-3 on the DSL:

Bioaccumulative?

Data are available from a bioconcentration factor (BCF) study in fish (fathead minnows) following OECD Guideline 305E (OECD SIDS Assessment, p. 17). The results, BCF = 87, calculated from the data on individual LAS homologues and isomers for a commercial LAS mixture (C11.6 LAS), indicate low bioaccumulative potential. The BCF findings are supported by other data indicating rapid metabolism (depuration) in fish (and in rats) of LAS.

The weight of available evidence strongly supports the DSL categorization that LAS is not bioaccumulative.

Persistent?

The available data indicate that LAS undergoes rapid and complete biodegradation in the environment, demonstrating ready biodegradability in OECD 301A and 301B tests (See OECD SIDS Assessment, pp. 15-16).

The weight of available evidence strongly supports the DSL categorization that LAS is not persistent.

Human Health Priorities?

Regarding potential consumer exposures, the OECD SIDS Assessment concludes (p. 20):

> The greatest potential for exposure of humans to LAS is associated with consumer use of laundry and cleaning products. Consumer exposure could result from direct or indirect skin or eye contact, inhalation of aerosols from cleaning sprays, and oral ingestion of residues deposited on dishes, accidental product ingestion, or indirectly from drinking water. Based on exposure modeling (Annex 1), the greatest potential of LAS exposure is from pretreatment of laundry, due to direct hand and forearm contact with neat product formulations, and from residual product on laundry clothing due to the large surface area of the body in contact with clothing.

The OECD SIDS Assessment of LAS includes an exposure assessment (Annex I, Use and Exposure Information), which concludes (pp. 64-5) that:

> Modeled estimates of environmental exposure leading to indirect human exposure from drinking water and fish consumption range from 3.5×10^{-5} to 9.3×10^{-7} mg/kg/day.
>
> The results of the dermal exposure modeling for various consumer activities range from 5.6×10^{-2} to 4.7×10^{-5} mg/kg/day.
>
> These human exposure evaluations include conservative (protective) input assumptions (e.g. all modeled exposures are conservative by a factor of at least 100 due to use of a default assumption of 100% absorption vs. a measured value of 1%).

Based on the exposure assessment, LAS should be categorized as Lowest Potential for Exposure.

Regarding human health hazard potential, the OECD SIDS Assessment of LAS concludes (p. 50):

> The chemicals in the LAS category are currently of low priority for further work because of their low hazard potential except for skin and eye irritation and acute inhalation. Based on data presented by the Sponsor Country, exposure to respirable particles is anticipated to be low. Other countries may desire to investigate any exposure scenarios that were not presented by the Sponsor Country.

Based on the Human Health conclusion of the OECD SIDS Assessment (p. 50), LAS should be classified as Low Hazard Potential.

Regarding the potential risks of LAS, the exposure assessment notes that an appropriate NOAEL from animal studies for use as comparison is 85 mg/kg/day.

Comparison of the estimates of indirect human exposure from drinking water and fish consumption to the NOAEL gives margins of exposure greater than 1 million.

Comparison of estimates from dermal exposure modeling for various consumer activities to the NOAEL gives margins of exposure greater than 1500.

Based on these large margins of exposure, LAS poses low risk to human health. This is also the conclusion reached by the Health and Environmental Risk Assessment (HERA) project report on LAS (http://www.heraproject.com/files/4-F-HERA_LASFinalReport2007revision10_07.pdf), which concluded (p. 5):

> In view of the extensive database on toxic effects, the low exposure values calculated and the resulting large Margin of Exposure described above, it can be concluded that use of LAS in household laundry and cleaning products raises no safety concerns for the consumers.

Based on the weight of available evidence, LAS should be categorized as Low Human Health Priority.

Meets Human Health Categorization Criteria?

Based on the available data (above) demonstrating that LAS has low potential for human exposure and is neither persistent nor bioaccumulative and has low hazard potential with low risks (large margins of exposure) for indirect human exposure from drinking water and fish consumption and from dermal exposure from consumer use, LAS does not meet the human health criteria.

Meets CEPA Categorization Criteria?

Based on the available data (above) demonstrating that LAS does not meet the human health categorization criteria, LAS does not meet the CEPA criteria.

We respectfully request that the information cited in this message be used to update the categorization of LAS CAS 68411-30-3 on the DSL and that this information be retained in the CEPA DSL file on LAS CAS 68411-30-3.

Additional information sources

Additional information on LAS may be found at the websites for Ecosol (http://www.lasinfo.org/) and CLER (www.cler.com).