

Department of Environment, Great Lakes, and Energy

INTEROFFICE COMMUNICATION

TO: File for sodium aluminate CAS # 1302-42-7

FROM: Doreen Lehner, Toxics Unit, Air Quality Division

DATE: July 31, 2019

SUBJECT: Rescind the Initial Threshold Screening Level for Sodium Aluminate

The Initial Threshold Screening Level (ITSL) for sodium aluminate of 0.1 µg/m³ with annual averaging time is being rescinded.

After reviewing the basis of the sodium aluminate ITSL, it was determined that the lack of toxicity information which prompted the use of Rule 232(1)(i) is inappropriate to use for protection of certain acute inhalation exposures. Sodium aluminate is a highly corrosive chemical and would cause acute irritating effects to the lungs. With these specific hazards, the default value may not be health protective. As there is no chemical specific toxicity data to support a more appropriate and defensible ITSL for sodium aluminate, the ITSL of 0.1 µg/m³ with annual averaging time is being rescinded. Sodium aluminate will be evaluated on a case-by-case basis until chemical specific toxicity information is available to derive a screening level.

DL:lh

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: Sodium aluminate File (CAS# 1302-42-7)
FROM: Doreen Lehner, Toxics Unit, Air Quality Division
DATE: December 27, 2018
SUBJECT: Screening Level for Sodium aluminate (CAS# 1302-42-7)

The initial threshold screening level (ITSL) for sodium aluminate (CAS# 1302-42-7) is 0.1 $\mu\text{g}/\text{m}^3$ based on an annual averaging time.

Sodium aluminate (CAS# 1302-42-7) is also known as sodium aluminium oxide or sodium meta aluminate. It is a hygroscopic white powder with a molecular weight of 81.97 g/mol. Sodium aluminate is used: as a source in the production of aluminium hydroxide; in some water softening systems to improve flocculation and in removing silica and phosphates; in the making of some concretes; in the paper industry; in fire brick production; in alumina production; as an intermediate in the production of zeolites; and it is a potential source of fuel for hydrogen powered cars.



Figure 1. Structure of Sodium aluminate.

A literature review was conducted to determine an initial threshold screening level (ITSL) for sodium aluminate. The following references and databases were searched: United States Environmental Protection Agency (US EPA) Integrated Risk Information System (IRIS); National Institute for Occupational Safety and Health (NIOSH); American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values and Biological Exposure Indices (TLV/BEI) 2017 Guide; National Toxicology Program (NTP) Study Database; International Agency for Research on Cancer (IARC); Chemical Abstract Service (CAS) SciFinder (searched 7/3/2018), National Library of Medicine (NLM) Hazardous Substances Data Bank (HSDB); US EPA Chemview; and Canadian Center for Occupational Health and Safety (RTECS).

There is no reference concentration or reference dose available for sodium aluminate. There is no NIOSH recommended exposure limit data available for this compound. ACGIH has a TLV-TWA for aluminum metal and insoluble compounds. As sodium aluminate is highly soluble in water, the ACGIH TLV cannot be used for this compound. "Sodium aluminate is considered to be a highly corrosive substance, but no acute toxicity data appear to have been developed for this substance" (HSDB, 2009). Based on Rule 232(1)(i) the ITSL is set at the default of 0.1 $\mu\text{g}/\text{m}^3$. According to Rule 232(2)(c), the averaging time is annual.

Based on the above data, the ITSL for sodium aluminate is 0.1 $\mu\text{g}/\text{m}^3$ based on an annual averaging time.

References:

ACGIH. 2008. Aluminum Metal and Insoluble Compounds. TLVs and BEIs Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices. ACGIH Worldwide Signature Publications.

Act 451 of 1994. Natural Resources and Environmental Protection Act and Air Pollution Control Rules, Michigan Department of Environmental Quality.

HSDB. 2009. Hazardous Substances Databank. National Library of Medicine. Available online at: <https://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB> (search on CAS number).