Substance Risk Evaluation for Determining Environmental Emergency Planning under the *Environmental Emergency Regulations* Set under the *Canadian Environmental Protection Act, 1999* (CEPA 1999)

Sulphuric acid
(CAS No. 7664-93-9)

Risk Evaluation Conclusion:

- **Threshold Quantity of 0.22 tonnes (pH ≤ 2) due to corrosiveness**
- **Is candidate for the *Environmental Emergency Regulations***

1.0 INTRODUCTION

The *Environmental Emergency Regulations*, developed under Part 8 of the *Canadian Environmental Protection Act, CEPA), 1999* (Government of Canada, 2011) establish a list of substances for which fixed facilities must notify Environment Canada that they store or use the substance on-site, by providing notices to Environment Canada, reporting when the substance is released into the environment, and developing an environmental emergency plan (E2 plan) for each substance stored or used at a fixed facility at or above specified threshold quantities.

To determine if a substance is a candidate to be added to the *Environmental Emergency Regulations*, Environment Canada has developed a risk evaluation methodology based on the following hazard categories:

- Physical: flammable and combustible or oxidizing substances, or those having a potential to cause vapour cloud explosion or pool fires.
- Human Health: substances that are toxic by inhalation, are carcinogenic, or are corrosive.
- Environmental Health: substances that are: corrosive, persistent, bioaccumulative, or aquatically toxic.

For more information on the methodology for setting threshold quantities in the Environmental Emergency Regulations, please refer to Environment Canada (2014).

Sulphuric acid (CAS No. 7664-93-9) was selected for risk evaluation because it is a substance that meets the criteria for corrosive substances as defined by OECD (OECD, 2001) that, if spilled, could be immediately harmful to humans and/or the environment.

Following the risk evaluation, Environment Canada recommends that this substance be proposed for addition to Schedule 1 of the *Environmental Emergency Regulations* at a threshold quantity of 0.22 tonnes.

2.0 SUMMARY OF THE RISK EVALUATION

2.1 Physical Hazard: Flammable, Combustible or Oxidizing Substances

Because sulphuric acid does not have an identified flash point (no flash point data were available during the data gathering process) and has a boiling point of 290°C (IUCLID, 2000), this substance does not present the possibility of a vapour cloud explosion. Therefore, no threshold is set for this substance as a result of its potential for flammability or combustibility.

2.2 Physical Hazard: Potential for Pool Fires

Sulphuric acid is not capable of causing a pool fire.

2.3 Human Health Hazard: Inhalation Toxicity

Because sulphuric acid does not have a vapour pressure greater than 10 mmHg (1.33 kPa) at 25°C (Albemarble Corp, 2004), the substance does not have sufficient volatility to constitute an inhalation danger.

Therefore, no threshold is set for the inhalation toxicity to humans.

2.4 Human Health Hazard: Carcinogenicity

Because sulphuric acid is classified in group 1 of IARC (IARC, 1997), and because the substance does not have a half-life longer than five years in any medium, no threshold is set for the carcinogenicity of this substance.

2.5 Human and Environmental Health Hazard: Corrosive Substances

The substance has a measured pH equal to or less than 2, or equal to or greater than 11.5. A threshold of 0.22 tonnes is set for this substance.

2.6 Environmental Health Hazard: Persistent, Bioaccumulative, or Aquatically Toxic

Lethal concentration

This methodology was not used because pH ≤ 2 or pH ≥ 11.5 are considered corrosive to aquatic life.

Persistence

Sulphuric acid is classified as being practically non-persistent in water.

Bioaccumulation

Sulphuric acid is practically non-bioaccumulative.

2.7 Assigned Threshold

Following the risk evaluation methodology developed under section 200 of CEPA 1999, the categories (flammability, combustibility, oxidizers, inhalation toxicity, aquatic toxicity, carcinogenicity, corrosiveness, pool fires) having the lowest scientific threshold will be compared against other risk management considerations. For example, the threshold will be compared to other provincial and federal legislation or voluntary programs that may already provide adequate management of the risk from an environmental emergency. Proposed thresholds may also be modified based on policy and other considerations as assessed during the preliminary public consultation period. For more information regarding the determination of thresholds, please refer to the *Implementation Guidelines for the Environmental Emergency Regulations 2011* (Environment Canada, 2011).

Other Considerations

At this time, there are no other considerations to take into account for this substance that would result in an increase or a decrease in the calculated threshold quantity.

Findings

A proposed threshold of 0.22 tonnes is assigned for sulphuric acid based on its assessed corrosiveness. The threshold quantity and its respective concentration will not be finalized until after preliminary public consultation.

3.0 CONCLUSION

Information concerning the quantities of sulphuric acid (CAS No. 7664-93-9) in use in Canada indicates that the substance exists in commerce. Following the risk evaluation of sulphuric acid and taking into consideration the quantities in use in Canada, Environment Canada recommends that this substance be proposed for addition to Schedule 1 of the *Environmental Emergency Regulations* under CEPA 1999 at a threshold quantity of 0.22 tonnes at a pH of ≤ 2.

When doing the emergency planning of a substance, it is important to take into consideration not only the most stringent assigned threshold quantity, but all of the other higher-threshold quantities that are noted in association with this substance

Even if the quantity of a substance in use is below the threshold quantity indicated in the *Environmental Emergency Regulations*, Environment Canada recommends that emergency planning be applied to this substance in order to minimize, or prevent, any impacts on humans or the environment in the event of a release of the substance.

4.0 REFERENCES

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OECD (Organisation for Economic Co-operation and Development). 2001. Environmental Directorate, Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology, ENV/JM/MONO(2001)6, August 14, 2001.

5.0 FURTHER READING

Ketcheson K, Shrives J. 2010. Comparison of Threshold Quantities for Substances with Final AEGL-2 and IDLH Values under CEPA's Environmental Emergency Regulations. In: Proceedings of the Thirty-third Arctic and Marine Oilspill Program Technical Seminar on Environmental Contamination and Response. Environment Canada: Ottawa (ON). pp. 843-861.

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