

Summary of Risk Assessment Conducted Pursuant to subsection 83(1) of the *Canadian Environmental Protection Act, 1999*

Ministerial Condition No. 17736: Cobalt Bromide; Chemical Abstracts Service Registry No. 7789-43-7

Regulatory Decisions

Under the provisions for Substances and Activities New to Canada in Part 5 of the *Canadian Environmental Protection Act, 1999* (CEPA 1999), and pursuant to section 83 of that Act, the Minister of the Environment and the Minister of Health have assessed information in respect of the substance, and determined that the substance is anticipated to enter the environment in a quantity or concentration or under conditions that have or may have an immediate or long term harmful effect on the environment or its biological diversity.

In order to ensure that the substance does not cause harm to the environment or human health in Canada, its manufacture and import is authorized subject to conditions on its use, handling, and disposal as described in [Ministerial Condition No. 17736](#) published in the *Canada Gazette* Part I, Vol. 148, No. 43, October 25, 2014.

Substance Identity

The substance is a chemical containing cobalt and bromide that can be classified as an inorganic metal salt.

Notified Activities

The substance is proposed to be imported into Canada in quantities greater than 10,000 kg/yr for use as a catalyst in a chemical manufacturing process.

Environmental Fate and Behaviour

Based on its physical and chemical properties, if released to the environment, bromide (Br^-) and cobalt (Co^{2+}) ions are expected to be obtained from the dissociation of the substance in water. The substance is not considered persistent, but the dissociation products are considered persistent in water and soil compartments. The substance and its dissociation products are not expected to be bioaccumulative based on low expected bioaccumulation factor (BAF) and bioconcentration factor (BCF) values.

Ecological Assessment

Based on the available hazard information on the dissociation products, cobalt has high (LC_{50} and $\text{EC}_{50} < 1 \text{ mg/L}$) chronic toxicity in fish, invertebrates and algae. The predicted no effect concentration was calculated to be $< 1 \mu\text{g/L}$ based on 5th percentile hazardous concentration to

5% of species (HC5) of the species sensitivity distribution (SSD) for cobalt, which was used to estimate the ecological risk.

The notified and other potential activities in Canada were assessed to estimate the environmental exposure potential of the substance and its dissociation products throughout their life cycle. Environmental exposure from the notified activity is expected to be mainly from the notified use by release of the substance and its dissociation products to water at levels of > 1 kg/day. The predicted environmental concentration for notified activities is estimated to be > 1 µg/L.

Based on the exposure resulting from the notified use as a catalyst in conjunction with high toxicity (LC50 and EC50) of its cobalt dissociation products, it is suspected that the substance is capable of causing ecological harm in Canada if released to water.

Human Health Assessment

Based on the available hazard information on the substance and surrogate data on structurally related chemicals, the substance has a moderate potential for acute toxicity by the oral route of exposure (>300-2000 mg/kg bw) and a moderate potential for subchronic toxicity following repeat oral (dietary) doses in mammalian test animals (NOAEL=10-100 mg/kgbw/day) and developmental/reproductive toxicity in rats following oral exposure (<50 mg/kg bw/day). It is a potential dermal sensitizer and is mutagenic *in vitro* and *in vivo* (via inhalation), therefore the substance has the potential to cause genetic damage.

When used as an industrial catalyst, direct exposure of the general population is not expected. Indirect exposure of the general population from environmental media such as drinking water is expected to be low and may reach levels of 0.01-0.1 µg/kg-d.

Based on the absence of direct exposure and low level of indirect exposure, the substance is not likely to pose a significant health risk to the general population, and is therefore unlikely to be harmful to human health.

Other Considerations

Cobalt-containing substances are presently being assessed as a group under the [Chemicals Management Plan](#).

Assessment Conclusion

The substance is suspected to be harmful to the environment according to the criteria under paragraph 64(a) of CEPA 1999.

Due to the identified risks to the environment related to aquatic toxicity if the substance is used as a catalyst in a chemical manufacturing process, a [Ministerial Condition No. 17736](#) was published in the *Canada Gazette* Part I, Vol. 148, No. 43 on October 25, 2014 to restrict the manner in which the notifier may manufacture and import the substance with conditions on its use, handling, and disposal in order to mitigate these risks.

A conclusion under CEPA 1999, on this substance, is not relevant to, nor does it preclude an assessment against the hazard criteria for Workplace Hazardous Materials Information System that are specified in the *Controlled Products Regulations* or *Hazardous Products Regulations* for products intended for the workplace.