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

New Substances Notification 20884: Carbon disulfide, reaction products with potassium hydroxide, metal salt and sulfur (Confidential Accession Number 19617-5)

Regulatory decisions

Under the provisions for Substances and Activities New to Canada in Part 5 of the *Canadian Environmental Protection Act, 1999* (CEPA), and pursuant to section 83 of the Act, the Minister of the Environment and the Minister of Health have assessed information in respect of the substance and have determined that it is not 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, constitute or may constitute a danger to the environment on which life depends, or constitute or may constitute a danger in Canada to human life or health.

Substance identity

The notified chemical is carbon disulfide, reaction products with potassium hydroxide, metal salt and sulfur (Confidential Accession Number 19617-5), and is considered a substance of Unknown or Variable composition, Complex reaction products or Biological materials (UVCB).

Notified and potential uses

The substance is proposed to be imported into Canada in quantities greater than 10 000 kg/yr for the notified use in the mining and power generation industries. No other uses are anticipated in Canada.

Environmental fate and behaviour

Based on its physical and chemical properties, if released to the environment, the substance will tend to partition to water. The substance is not expected to be persistent and environmental exposures are expected to be low. However, the transformation product, carbon disulfide, is expected to partition to air and persist there. The substance and its transformation product are not expected to bioaccumulate based on their rapid degradation and rapid metabolism in organisms, respectively.

Environmental risk assessment

Based on the available hazard information, the substance has moderate acute toxicity to fish (median lethal concentration (LC_{50}) 1-100 mg/L). The transformation product is expected to have moderate acute toxicity in amphibians, aquatic invertebrates and algae (median effective concentration 1-100 mg/L) and low to moderate acute toxicity in fish (LC_{50} > 1 mg/L; no-

observed-effect-concentration > 1 mg/L). A predicted no-effect concentration was not calculated given the low potential for environmental exposure.

The transformation product, carbon disulfide, is highly volatile and as such its abiotic effects were also assessed. The photochemical ozone creation potential of the substance is considered to be low. The ozone depletion potential of the substance is considered to be negligible given that the substance is non-halogenated. The global warming potential is considered low.

The notified activities in Canada were assessed to estimate the environmental exposure potential of the substance throughout its life cycle. Environmental exposure from the notified activity is expected to be mainly from cleaning of transportation vessels and disposal from release of the substance to water at low rates, and from release of the transformation product to air. A predicted environmental concentration was not calculated due to the low potential for environmental exposure. No potential activities that could significantly increase environmental risks compared to those notified were identified.

Based on the low potential for environmental exposure, the substance is unlikely to cause harm to the environment in Canada.

Human health risk assessment

Based on the available hazard information, the substance is expected to have a moderate acute toxicity by the inhalation route (LC_{50} > 10-20 mg/L), low acute toxicity by the oral route (median lethal dose > 2000 mg/kg body weight) and high subchronic toxicity following repeated inhalation doses in mammalian test animals (90-day no-observed-adverse-effect concentration (NOAEC) < 0.2 mg/L/6 hour). The substance is expected to have a moderate reproductive/developmental toxicity following repeated inhalation doses in mammalian test animals (NOAEC 0.6-3.0 mg/L/day). It is not expected to be a dermal sensitizer. It is not mutagenic *in vitro* but the surrogate substance showed weak or equivocal potential for clastogenicity *in vivo*. The transformation product, carbon disulfide, is not classified as a carcinogen because there are no definitive data available.

When the notified substance is used in the mining and power generation industries, direct exposure of the general population is not expected due to the industrial nature of the use. Indirect exposure of the general population from environmental media is not expected given the specialized industrial use of the substance, which results in little or no release to the environment. No potential uses that could significantly increase human health risks compared to the notified uses were identified.

Based on the low potential for 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.

The assumptions made in the assessment are considered to be adequately protective for the general population as well as for subpopulations who may be more susceptible or highly exposed.

Assessment conclusion

When the substance is used as notified, it is not expected to be harmful to human health or the environment according to the criteria under section 64 of the Act.

Industrial environmental releases of the transformation product, carbon disulfide, are risk managed through National Pollutant Release Inventory reporting requirements, which require annual environmental releases of this substance that meet threshold criteria to be recorded and publicly reported. Carbon disulfide is also subject to Canada's *Environmental Emergency Regulations, 2019*, which require that measures be taken to prevent and prepare for environmental emergencies.

A conclusion under CEPA, 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 the *Hazardous Products Regulations* for products intended for the workplace.