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

New Substances Notification No. 19006: Aluminum phosphite

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 aluminum phosphite (Chemical Abstracts Service No. 56187-23-1).

Notified and Potential Activities

The substance is proposed to be imported into Canada in quantities greater than 10 000 kg/yr for the notified use as a flame retardant additive for plastics manufacturing. No other activities 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 soil and sediment. Over time it will dissolve and partition to soil pore water or water. The substance is expected to be persistent in water because the dissolved metal ions cannot degrade further and are in a stable valence state. The substance is not expected to bioaccumulate based on its expected bioconcentration factor (<5000 L/kg) and the anionic charge of the dissolved ions.

Ecological Assessment

Based on the available hazard information, the substance has low acute toxicity in fish and aquatic invertebrates (median lethal concentration (LC_{50}) and median effective concentration (EC_{50}) >100 mg/L) and low chronic toxicity in fish, aquatic invertebrates and algae (no-observed-effect-concentration and lowest-observed-effect-concentration >10 mg/L; EC_{50} >100 mg/L). A predicted no-effect concentration was not calculated given the low potential for ecological hazard.

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 activities is

not expected as, when imported, the notified substance will be encapsulated within the stable polymer matrix of plastic pellets at concentrations of 3-4%. If the pure substance is imported in Canada, it will be imported directly to compounding plants to be encapsulated into plastic. A predicted environmental concentration was not calculated due to the low potential for environmental exposure and low ecotoxicity. No other potential activities have been identified.

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

Human Health Assessment

Based on the available hazard information, the substance has a low potential for acute toxicity by the oral, dermal and inhalation routes of exposure (oral and dermal median lethal dose >2000 mg/kg body weight and inhalation LC_{50} >5 mg/L/4hr) and low subchronic toxicity following repeat oral doses in mammalian test animals (28-day no-observed-adverse-effect level (NOAEL) >300 mg/kg-bw/day and 90-day NOAEL >100 mg/kg-bw/day). The notified substance has a low potential for reproductive/developmental toxicity by the oral route of exposure (NOAEL >1000 mg/kg-bw/day). It is not a skin sensitizer (>10% estimated concentration required to produce a stimulation index of 3 (EC3) (local lymph node assay)). It is not mutagenic *in vitro* and is not clastogenic *in vitro* or *in vivo*. Therefore, the substance is unlikely to cause genetic damage.

When the notified substance is used as a flame retardant additive for plastics, consumers may come into contact with end-use products containing the substance; however, direct exposure is not expected because the substance will be encapsulated within the stable polymer matrix of the plastic and will be unavailable for uptake. Indirect exposure of the general population from environmental media such as drinking water is expected to be low since the substance will be encapsulated in a polymer matrix and no environmental release is expected. No other potential uses have been identified.

Based on the low toxicity and 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.

Assessment Conclusion

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

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 *Hazardous Products Regulations* for products intended for the workplace.