

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

July 15, 1996

TO: Sodium Hypochlorite File (CAS # 7681-52-9)

FROM: Gary Butterfield, Toxics Unit

SUBJECT: ITSL for Sodium Hypochlorite

EPA's IRIS database refers queries on sodium hypochlorite to the chlorine file.

Occupational exposure limits (TLV, REL and PEL) for chlorine are available. However, there is no OEL for sodium hypochlorite. These chlorine OEL's are for a TWA of 0.5 ppm or 1.5 mg/m³. These levels are considered to be protective of chlorine's irritation effects, as well as, decreased responses in pulmonary function testing.

A February 29, 1996 CAS-on-line search found no long term inhalation toxicity studies have been published. A couple of recent acute guinea pig studies found respiratory tract hyper responsiveness, following exposure to sodium hypochlorite aerosols. There are some case reports that include descriptions of long term pulmonary changes in humans following an acute exposure to chlorine generated from sodium hypochlorite. Asthma type symptoms have been reported many months after just a few minutes of these exposures. Unfortunately, these case reports were the result of accidental exposures, therefore the exposure doses and durations were not measured, making them less useful for setting an ITSL. However, these reported pulmonary effects following inhalation makes it questionable if oral data should be considered useful for establishing a screening level.

The active portion of NaOCl is Cl the ion. NaOCl is very soluble in water and in the lungs would be expected to be transferred easily to lung surface. The moist surface of the lung would be expected to easily disassociate the chlorine ions from the sodium and oxygen of the sodium hypochlorite molecule.

The screening level for sodium hypochlorite is being based on the TLV for chlorine (Cl₂), the reactive/active portion of the hypochlorite molecule. The chlorine ITSL is being adjusted from 15 to 16 µg/m³ to account for the sodium and oxygen portion of the sodium hypochlorite molecule. The ITSL for sodium hypochlorite is being established at 16 µg/m³ with an eight hour averaging time.

GB:slb