

VII. RESEARCH NEEDS

No detailed epidemiologic studies of the effects of occupational exposure to ketones other than methyl n-butyl ketone have been found in the literature. Such studies are needed to determine chronic effects of ketone exposure on humans and safe levels of such exposures.

An investigation of potential neurotoxic effects of ketones other than methyl n-butyl ketone is needed. Such studies are needed to determine if any other ketones can produce peripheral neuropathy in exposed workers. Studies are also necessary to gather information on the toxicity of metabolites and on relevant toxic interactions with other chemicals. In this connection, NIOSH is currently (1978) investigating evidence of peripheral neuropathy in an operation involving exposure to methyl ethyl ketone and toluene. Studies in animal models are needed to examine possible neurotoxic effects from mixed exposures. Also, since methyl ethyl ketone has been shown to enhance the toxicity of methyl n-butyl ketone, the possibility of a toxic interaction between methyl ethyl ketone and other chemicals should be explored.

Further studies are needed to discover whether these ketones have carcinogenic, mutagenic, or teratogenic effects.

Preliminary conclusions regarding the potential of acetone and cyclohexanone to cause cataracts have been made based on animal data. Retrospective morbidity studies of workers exposed to ketones should be performed to determine the cataract-causing potential in humans.

Although studies on the concentrations of ketones that produced irritation of the eyes, nose, and throat were found, not all of the ketones

were tested. Research is required to determine the concentrations of ketones that produce irritation. Investigations should also be conducted to determine the concentrations of ketones that can produce impaired judgment.

Information concerning the resistance to ketone penetration of personal protective devices, such as gloves and clothing, is needed.

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