

**Revised July 1987****Hazard Alert****Hazard Evaluation System and Information Service**

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# Cycloheximide

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In a recent study, cycloheximide caused birth defects when pregnant animals were exposed to it at low levels. Cycloheximide also damages the reproductive systems of male animals. It is not known whether cycloheximide can affect human reproduction. However, based on the animal studies, HESIS recommends that cycloheximide be considered potentially harmful to the human reproductive system.

## **HOW TO KNOW WHETHER YOU ARE BEING EXPOSED**

Cycloheximide is an odorless, white, crystalline powder used in hospital and research laboratories as an antibiotic, a protein synthesis inhibitor, or a plant growth regulator. Cycloheximide also has broader agricultural use as a fungicide, but this use is being discontinued due to the recent findings of birth defects at low doses in animals.

Other names for cycloheximide include Acti-aid,<sup>R</sup> Acti-dione,<sup>R</sup> Actispray,<sup>R</sup> Actidone, Hizaricin, Kaken, Naramycin, Naramycin A, and Neocycloheximide.

Under the Hazard Communication Standard (General Industry Safety Order [GISO] 5194, Title 8, California Administrative Code) your employer must tell you if you are working with cycloheximide or other hazardous substances, and must make Material Safety Data Sheets (MSDSs) for those substances available to you on your request. Certain laboratories are exempt from these requirements, based on criteria set forth in paragraph (b)(3) of GISO 5194.

If you think you may be exposed to cycloheximide, you should ask to see the MSDS for the product involved. An MSDS lists the chemical contents of a product, describes its health and safety hazards, and gives methods for using and storing it safely.

Current MSDSs for cycloheximide may not address the reproductive hazards discussed in this Hazard Alert.

This Hazard Alert is an aid for worker training programs. It does not take the place of a Material Safety Data Sheet.

## **HOW CYCLOHEXIMIDE ENTERS AND AFFECTS THE BODY**

Cycloheximide enters your body when you breathe it as dust in the air. Cycloheximide liquid or powder can also be absorbed through your skin, especially if there is lengthy skin contact. You can swallow cycloheximide if the dust gets in your mouth, if it contaminates your food or beverages, or if you smoke or eat when there is dust on your hands.

**Skin:** Cycloheximide powders or solutions can irritate the skin, causing symptoms such as redness, burning, and itching. The symptoms may not occur for up to 24 hours after exposure.

**Reproduction:** Cycloheximide causes adverse reproductive effects in male and female animals at levels below those which cause other toxic effects. Studies in animals show that cycloheximide causes birth defects when females are exposed to low doses during pregnancy. In male animals, it is toxic to sperm and damages the testes. At present, it is not known whether cycloheximide can cause similar reproductive effects in humans, but, based on the animal studies, you should handle it as a potential human reproductive toxin and minimize your exposure as outlined below.

**Cancer:** Cycloheximide causes changes in genetic material in laboratory tests. This suggests that it may cause cancer. Cycloheximide has not been adequately tested to determine whether it causes cancer in animals or humans.

**Other:** In some animal studies, cycloheximide was toxic to the bone marrow, where blood cells are formed. The most common effect was anemia (a shortage of red blood cells). Whether the same effects occur in workers exposed to cycloheximide is uncertain.

## SOURCES AND CONTROL OF EXPOSURE

The highest potential for exposure in the laboratory is during the weighing of cycloheximide and during preparation of solutions of cycloheximide. The guidelines below should be followed in addition to the usual careful practices for handling toxic chemicals in laboratories.

**Authorized Personnel:** One person should be authorized and trained to handle cycloheximide in order to limit the number of exposed workers. The authorized person should store cycloheximide powder in a locked cabinet.

**Weighing And Preparation Of Solutions:** Cycloheximide powder should always be handled in a laboratory hood with an appropriate ventilation rate (see GISO 5154.1). This hood should be in an area not subject to drafts created by doors, windows, and laboratory cross- traffic. The transfer of cycloheximide powder should be performed over a disposable material covering the hood working surface, or over a tray that can be decontaminated should spillage occur. Disposable materials contaminated with cycloheximide should be treated as hazardous waste. To minimize contact with cycloheximide, portions should be weighed out in advance and stored for future use, when possible.

**Cleaning:** Cycloheximide is broken down by alkaline solutions (pH greater than 7). To decontaminate work areas where cycloheximide has been used, surfaces should be wiped with alkaline solutions. Reusable containers and glassware which have contained cycloheximide should be rinsed with alkaline solutions before washing. Almost all soaps are alkaline, so that washing with soap will break down cycloheximide.

**Personal Protective Equipment:** Persons working with cycloheximide powder and solutions should wear tight-fitting, disposable, impermeable gloves in order to prevent skin contamination and subsequent skin absorption or hand-to-mouth exposure. Due to lack of test data, no firm recommendation for a glove material can be made at this time. Common latex surgical gloves may offer some protection. After use, gloves should be treated as a hazardous waste, or should be decontaminated by soaking in an alkaline solution before being disposed of. Even when gloves are used, hands and other areas of the skin which may be exposed to cycloheximide should be washed with soap and water. As a good work practice, a lab jacket or apron should also be worn. Where powders and concentrated solutions are handled within a proper laboratory hood, respiratory protection is not necessary.

**Substitution:** An effective way to reduce exposure to cycloheximide is to use an appropriate substitute chemical. However, careful research should be performed, to ensure that the substitutes are actually less hazardous.