

1. PUBLIC HEALTH STATEMENT

This Statement was prepared to give you information about 4,4'-methylenebis(2-chloroaniline) (MBOCA) and to emphasize the human health effects that may result from exposure to it. The Environmental Protection Agency (EPA) has identified 1,350 hazardous waste sites as the most serious in the nation. These sites comprise the "National Priorities List" (NPL): Those sites which are targeted for long-term federal cleanup activities. MBOCA has been found in at least 4 of the sites on the NPL. However, the number of NPL sites evaluated for MBOCA is not known. As EPA evaluates more sites, the number of sites at which MBOCA is found may increase. This information is important because exposure to MBOCA may cause harmful health effects and because these sites are potential or actual sources of exposure to MBOCA.

When a substance is released from a large area, such as an industrial plant, or from a container, such as a drum or bottle, it enters the environment. This release does not always lead to exposure. You can be exposed to a substance only when you come in contact with it. You may be exposed by breathing, eating, or drinking substances containing the substance or by skin contact with it.

If you are exposed to a substance such as MBOCA, many factors will determine whether harmful health effects will occur and what the type and severity of those health effects will be. These factors include the dose (how much), the duration (how long), the route or pathway by which you are exposed (breathing, eating, drinking, or skin contact), the other chemicals to which you are exposed, and your individual characteristics, such as age, gender, nutritional status, family traits, life-style, and state of health.

1.1 WHAT IS MBOCA?

MBOCA is a synthetic chemical used in industry primarily to produce castable polyurethane parts. It also has a coating application in chemical reactions to "set" glues, plastics, and adhesives. Since plastics have many uses, MBOCA is used very widely. Other names for MBOCA include 4,4'-methylenebis(2-chloroaniline), bis amine, DACPM, MCA, methylenebis ortho chloroaniline, and MOCA. The name MBOCA comes from methylene bis *ortho* chloro aniline. Pure MBOCA is a colorless solid, but MBOCA is usually made and used as yellow, tan, or brown pellets. If MBOCA is heated above 205°C it may decompose. MBOCA has no odor or taste. Chapter 3 contains more information on the chemical and physical properties of MBOCA. Chapter 4 contains more information on its production and use.

1.2 WHAT HAPPENS TO MBOCA WHEN IT ENTERS THE ENVIRONMENT?

MBOCA may enter the ENVIRONMENT through disposal of solid waste from manufacturing plants that use MBOCA in castable polyurethane processing. MBOCA is not likely to evaporate from the soil or water into the air. However, it may enter the air as dust when it is made at production plants or during mixing and grinding operations at polyurethane plants. It may enter surface waters from the waste streams of these plants. Some of the

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MBOCA may be broken down by sunlight or by microscopic organisms. Chapter 4 contains more information on the production, use, and disposal of MBOCA, while Chapter 5 has information on the release of MBOCA to the environment.

1.3 HOW MIGHT I BE EXPOSED TO MBOCA?

Most exposure to MBOCA occurs in the workplace. If you work with MBOCA, you may breathe small particles of it in the air or get it on your skin if you brush against a surface covered by MBOCA dust. There are several ways to be exposed to MBOCA outside of the workplace. For example, you may be exposed to MBOCA if you live in an area where the soil is contaminated with MBOCA. You may also be exposed if you eat foods grown in soils that contain MBOCA. However, you are unlikely to drink water contaminated with MBOCA because it does not dissolve in water. Chapter 5 contains more information on the potential exposure of humans to MBOCA.

1.4 HOW CAN MBOCA ENTER AND LEAVE MY BODY?

MBOCA can enter your bloodstream if you breathe it in the air, eat it, or get it on your skin. Results of studies in humans and animals show that MBOCA can enter your body very quickly through the skin or lungs. Once MBOCA is in your body, most of it leaves your body quickly. MBOCA and its breakdown products leave the body through urine and feces. Results of studies in humans and animals show that most MBOCA leaves the body within a few days of exposure. The small amount of MBOCA that may remain in your body after you are exposed is likely to break down or leave your body at a slower rate. Chapter 2 contains more information on how MBOCA can enter and leave the body.

1.5 HOW CAN MBOCA AFFECT MY HEALTH?

Studies of human exposure suggest that the small amounts of MBOCA usually found in the air or on surfaces in or near factories do not cause toxic effects. However, it is possible that acute exposure to a large amount of MBOCA, such as an industrial accident, may produce effects that we do not know very much about. Information on how MBOCA can affect your health is very limited, and we do not know if there are any other long-term human health effects of exposure to MBOCA. MBOCA is suspected of causing bladder cancer and is considered a probable human carcinogen. Information is being gathered to determine whether bladder cancer in humans may result from short-, medium-, or long-term exposures to MBOCA. We do not know if MBOCA causes birth defects in humans. Chapter 2 contains more information on the human health effects of MBOCA.

Studies in animals show that MBOCA can be harmful to the blood cells and livers of dogs and rats. MBOCA also causes lung, liver, breast, and bladder cancers. The Department of Health and Human Services, the International Agency for Research on Cancer, and EPA consider MBOCA to be a probable human carcinogen.

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1.6 IS THERE A MEDICAL TEST TO DETERMINE WHETHER I HAVE BEEN EXPOSED TO MBOCA?

Your urine can be tested for MBOCA within a few hours of exposure. This test, however, will not detect MBOCA days after exposure has ceased. This test may not be readily available in your doctor's office. Chapters 2 and 6 contain more information on testing for MBOCA in humans.

1.7 WHAT RECOMMENDATIONS HAS THE FEDERAL GOVERNMENT MADE TO PROTECT HUMANHEALTH?

The government has developed regulations and guidelines for handling MBOCA. They are designed to protect the public from the potential harmful health effects of this chemical. EPA has classified MBOCA as a hazardous waste that must meet specific disposal requirements.

The Occupational Safety and Health Administration (OSHA) regulates MBOCA in the workplace. The maximum allowable amount of MBOCA in workroom air, assuming an 8-hour workday and a 40-hour workweek, is 0.22 milligrams per cubic meter. However, the court has suspended such regulations for the present. Chapter 7 contains more information on international, national, and state regulations and guidelines for handling MBOCA in air, water, and other environments.

1.8 WHERE CAN I GET MORE INFORMATION?

If you have any more questions or concerns, please contact your community or state health or Environmental quality department or:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, E-29
Atlanta, Georgia 30333
(404) 639-6000

This agency can also provide you with information on the location of occupational and Environmental health clinics. These clinics specialize in the identification, evaluation, and treatment of illness resulting from exposure to hazardous substances.

