toxicology and safe handling of

Monsanto Aroclor

CHLORINATED DIPHENYL



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AROCLOR

TOXICOLOGY AND SAFE HANDLING

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FOR THE SAFE USE OF MONSANTO AROCLOR

INTRODUCTION

Aroclor is the registered trade mark for a range of chlorinated polyphenyls manufactured by Monsanto. These compounds are manufactured in this country and have been used safely in industry throughout the world for over 30 years. Aroclor compounds are synthetic chemicals and like many chemicals in common use if improperly handled, may prove harmful to human beings. This publication is intended to describe the extent of the toxicity of Aroclor and to provide guidance on the correct handling of these compounds.

DESCRIPTION

The Aroclor products are chlorinated polyphenyls ranging in form from pale mobile oils to yellow brittle resins and the following are the Aroclor grades currently used in this country.

Aroclor 1242	Aroclor 1262
Aroclor 1248	Aroclor 5460
Aroclor 1254	Aroclor 4465
Aroclor 1260	

The compositions of the above materials are indicated by the numbers. The first two digits represent:

12-chlorinated diphenyls

54-chlorinated triphenyls

44-blend of chlorinated diphenyls and chlorinated triphenyls 75 : 25.

The last two digits represent the approximate chlorine content expressed as a percentage by weight. These materials are non-oxidising and non-corrosive to metals; they are not hydrolysed by water, alkalis or acids, are fire-resistant and impart fire retardance to other materials.

SAFE USE

Like other chlorinated materials Aroclor, if taken or absorbed in sufficient quantities, can have toxic effects on the body. Specifically, there are two sets of symptoms which may occur if Aroclor is improperly handled and allowed to come into continuous contact with the skin or otherwise is ingested into the body. These are:-

1) A skin condition known as chloracne.

2) Liver damage.

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The higher the chlorine content, the more toxic the material is likely to be, although as the chlorine content is increased the materials become less volatile and more viscous and so less likely to be ingested.

PRECAUTIONS

Aroclor can be handled with safety provided that a strict standard of personal hygiene is observed. The following precautions are given as a guidance to everyday handling of this material.

1) Always wash well with soap and water before eating, drinking or smoking and at the end of work.

2) Should Aroclor come into contact with the skin it should be washed off immediately.

3) Clothing, hand tools and similar equipment which have been in contact with Aroclor should be cleaned. Aroclor spilt on the bench or floor should also be cleared up immediately and cloth or rags used for this purpose should be destroyed.

4) Aroclor should not be taken internally.

5) Inhalation of vapour should be avoided and adequate ventilation should always be supplied particularly if Aroclor is used at elevated temperatures. In certain circumstances, i.e. confined space work, respirators should be worn.

6) Goggles should be used to protect the eyes against accidental splashing.

7) Oil resistant gloves should be used to protect hands when continuously handling Aroclor.

YOU HAVE READ THIS - DOES THE MAN ON THE JOB KNOW HOW TO HANDLE THESE PRODUCTS?
NO HARM CAN COME TO OPERATORS IF THESE INSTRUCTIONS ARE OBSERVED.

TOXICOLOGY

The following medical data is given for your health department's records:-

1) Ingestion

The acute oral toxicity of Aroclor 1242 shows it to have an LD_{50} to rats of 4.15 ml./kg.

2) Inhalation

Inhalation tests on animals indicate that the maximum safe concentration of vapour is in the range 0.5 - 1.5 mg. of the lower chlorinated Aroclor compounds per cubic metre of air. The threshold limits (maximum allowable concentration for continuing exposure on an 8 hour working day basis) set by the American Conference of Government Hygienists are 1.0 mg. of the lower chlorinated Aroclor compounds per cubic metre of air and 0.5 mg. of the more highly chlorinated compounds, such as Aroclor 1254, per cubic metre of air. (Advice is available on analytical methods for determining the concentration of Aroclor vapour in air from Monsanto Chemicals Limited).

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3) Skin Contact

Aroclor may be absorbed through skin contact and continuous or repeated contact must be avoided because of the possible occurrence of chloracne or liver damage.

The following tests indicate some conditions in which Aroclor is not a primary irritant:-

Skin patch tests with a polyvinyl chloride free film plasticized with 11.5% by weight of Aroclor 1254 (about 25% based on the weight of the vinyl resin) and a similar amount of dioctyl phthalate showed that this film was not a primary irritant or a sensitizer. Skin patch tests with Aroclor 1254 alone applied to gauze and placed in contact with the skin showed no primary irritancy or sensitization. Other skin patch tests using canvas coated with Aroclor 5460 and an oil modified alkyd resin, in such a manner that the Aroclor concentration in the paint film or on the fabric was about 17% by weight of paint solids and the finished coated fabric contained approximately 7% by weight of Aroclor 5460, showed that this painted fabric did not produce a primary irritancy or sensitization of the skin.

4) First Aid

In the event of an operative suffering from severe exposure to Aroclor in any form, e.g. as the result of an accident, the following first aid is recommended as immediate treatment. However, in all cases a doctor should be consulted.

a) Ingestion - vomiting should be induced.

b) Inhalation - the patient should be taken out into the fresh air at once. If there is great difficulty in breathing, be prepared to administer artificial respiration.

c) Skin Contact - Aroclor should be washed off with soap and water immediately, a burn caused by contact with hot Aroclor should be treated as an ordinary burn. Aroclor adhering to the burnt area need not be removed immediately, unless treatment of the burn demands it, in which case either soap and water or repeated washings with a vegetable oil are recommended.

d) Eye Contact - eyes should be irrigated with plenty of clean water for at least 15 minutes.

It is recommended that regular inspection is carried out to ensure that the safety precautions are being observed.

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Every effort has been made to ensure that the information in this publication is reliable, but as the conditions under which it may be applied are beyond our control, we cannot accept responsibility for any results of its use.

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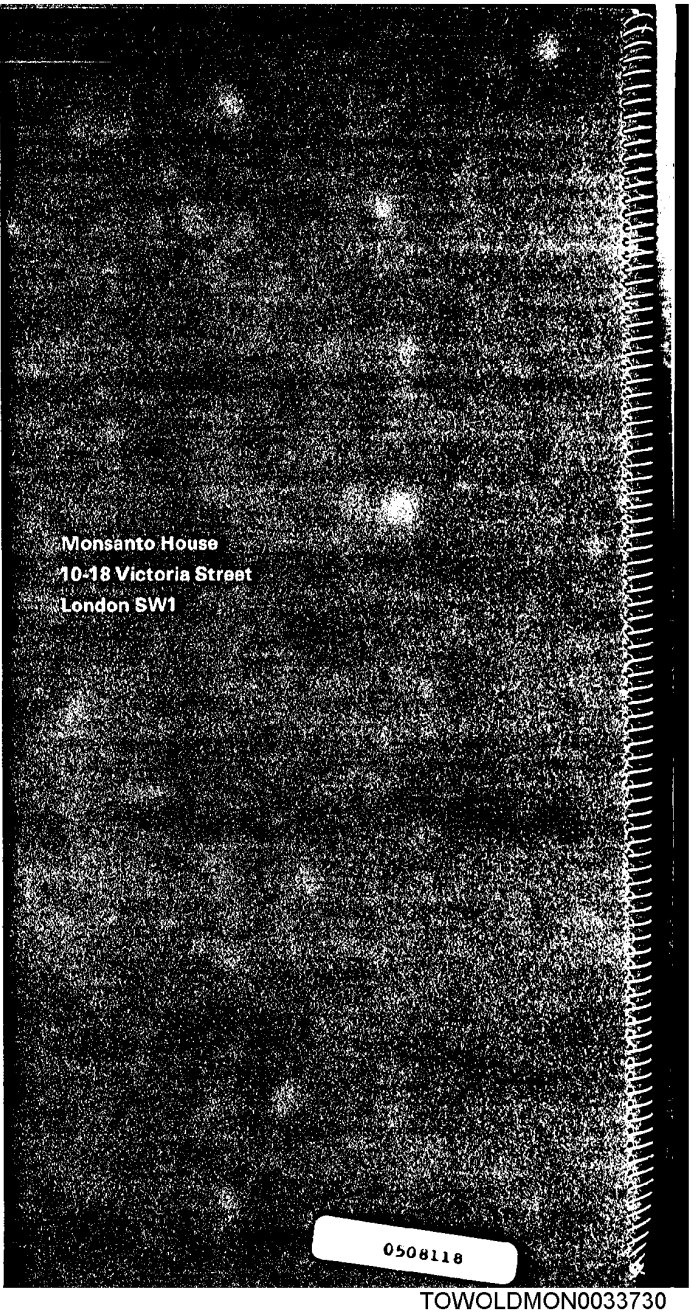

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