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OFFICE OF TOXIC SUBSTANCES  
CODING FORM FOR GLOBAL INDEXING

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PHENYLENEDIAMINES				
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M-PHENYLENEDIAMINE		108-45-2		

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THE DOW CHEMICAL COMPANY

June 28, 1983

MIDLAND, MICHIGAN 48640

Document Control Officer  
U.S. Environmental Protection Agency  
TSCA-8D1  
P.O. Box 2060  
Rockville, MD 20852



OPTS-84003A

Dear Sir or Madam:

As required by 40 CFR 716, we herewith submit copies of reports which meet the requirements of the referenced rule as Health and Safety Studies. As noted in the statement enclosed with the reports, some contain confidential business information.

The reports are separated into three categories for your convenience.

- ✓ Package 1. Reports which contain no Confidential Business Information.
- Package 2. Reports which contain Confidential Business Information.
- Package 3. Reports from which Confidential Business Information has been deleted. (Public File Copy of reports in Package 2).

Each report is marked with an identifying number at the top of the first page of the report, e.g., D-292. Use of this identification number in future correspondence regarding this submission will facilitate handling of questions.

In order to expedite the completion of our search and submission, no attempt was made to determine whether or not we manufactured or processed the chemicals which formed the subject of submitted reports. (40 CFR 716.6). Thus, submission of a report for any given material should not be construed as indicative of Dow's status as a manufacturer or processor of the material.

TD

Document Control Officer  
Page Two  
June 28, 1983

Many of the submitted reports contain information which is not relevant to Health or Safety Studies of listed chemicals, e.g., references to unlisted chemicals, marketing or process data, account numbers, internal document identification codes or distribution lists. Such information has been deleted from all copies submitted.

The index required by 40 CFR 716.6(b) is enclosed. It lists the Dow identification number and title of each report submitted in CAS number order. Please note that the index contains Dow Confidential Business Information.

Very truly yours,



Robert L. Hagerman  
Regulatory Specialist  
Regulatory and Legislative Issues  
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rt

Attachments

1E

Biological Research Laboratory  
THE DOW CHEMICAL COMPANY

Subject TOXIC PROPERTIES OF THE PHENYLENEDIAMINES

8782/1362  
2-312

FP- [redacted]  
Chg. [redacted]  
Rec'd 11-15-44  
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Work by E. M. Adams

Check *E. M. Adams* [redacted] 11-24-44

SUMMARY

Both meta- and para-phenylenediamine have earned rather notorious reputations through their ability to produce hypersensitivity, dermatitis, and other ill effects. The ortho-phenylenediamine has apparently had few uses; there are no reports of toxic effects upon man and but meager reports of experimental studies upon animals. Probably with all three isomers, definitely with meta- and para-phenylenediamine, rather strict hygienic precautions are necessary to prevent the occurrence of toxic effects among the workmen.

TOXIC PROPERTIES

para-Phenylenediamine is said to be a highly toxic substance. The minimum lethal dose for animals is but a few tenths of a gram per kilogram of body weight. The toxic effects observed in animals have not been well described, but those mentioned include irritation of the gastrointestinal tract, effects upon the central nervous system, and effect upon the vascular system leading to edema and eye changes.

The use of para-phenylenediamine in rubber manufacture and as a hair and fur dye has resulted in a very high incidence of rather severe toxic effects in man. Many persons have had initially or have rapidly developed a high degree of sensitivity. The toxic effects reported include dermatitis, edema, asthma, and occasionally gastrointestinal and systemic disturbances.

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meta-Phenylenediamine appears to be practically as hazardous as the para- isomer. It is but slightly less toxic and has slightly different toxic effects. The use of meta-phenylenediamine as a dye has apparently resulted in considerable difficulty from dermatitis and asthma.

As regards the ortho-phenylenediamine, a few animal experiments indicate a lesser toxicity than that of the isomers, and possibly different toxic effects.

PRECAUTIONS FOR SAFE USE

In preliminary laboratory experiments, in which small amounts of the phenylenediamines are handled infrequently, ordinary care as observed in the chemical laboratory, should prevent difficulty. In larger scale work, and particularly where these substances are used regularly, strict hygienic precautions must be observed to prevent excessive exposure to these substances, and all materials containing even small amounts of them.

## CERTIFICATE OF AUTHENTICITY

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