

201-14945A

**HIGH PRODUCTION VOLUME (HPV)
CHEMICAL CHALLENGE PROGRAM**

TEST PLAN

For

3,4,5,6-TETRACHLORO-2-PYRIDINE CARBONITRILE

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PLAIN ENGLISH SUMMARY

This test plan addresses 3,4,5,6-tetrachloro-2-pyridine carbonitrile (CAS No. 17824-83-8). Existing data are summarized. No additional data are needed under the HPV Challenge Program.

EXECUTIVE SUMMARY

The Dow Chemical Company hereby submits for review and public comment the test plan for 3,4,5,6-tetrachloro-2-pyridine carbonitrile under the Environmental Protection Agency's (EPA) High Production Volume (HPV) Chemical Challenge Program. It is the intent of The Dow Chemical Company to use a variety of existing data and scientific judgment/analyses to adequately characterize the SIDS (Screening Information Data Set) human health, environmental fate and effects, and physicochemical endpoints for this chemical.

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TEST PLAN FOR 3,4,5,6-TETRACHLORO-2-PYRIDINE CARBONITRILE

I. INTRODUCTION

The Dow Chemical Company has committed voluntarily to develop screening level human health effects, environmental effects and fate, and physicochemical test data for 3,4,5,6-tetrachloro-2-pyridine carbonitrile under the Environmental Protection Agency's (EPA's) High Production Volume (HPV) Challenge Program (Program).

This plan identifies the chemical and its CAS number and identifies existing data of adequate quality for the chemical to develop screening level data for the chemical under the Program. The objective of this effort is to identify sufficient test data and/or other information to adequately characterize the human health and environmental fate for the chemical in compliance with the EPA HPV Program. Physicochemical data that are requested in this program will be provided.

II. DESCRIPTION OF 3,4,5,6-TETRACHLORO-2-PYRIDINE CARBONITRILE

A. The Chemical

3,4,5,6-tetrachloro-2-pyridine carbonitrile (CAS No. 68412-40-8) is a member of a group of chemicals known as chloropyridines, used in the production of chlorinated pesticides. The safe handling information for this stream will be determined from existing data for the material and other structurally similar materials which have been studied to provide safe handling information.

III. TEST PLAN RATIONALE

A. Classification of the Chemical as a Site-Limited Intermediate

1. Requirements

Classification of 3,4,5,6-tetrachloro-2-pyridine carbonitrile as a site-limited intermediate under the EPA HPV program is dependent upon a number of criteria outlined by EPA. The Dow Chemical Company asserts that this derivative stream should be regarded as a site-limited intermediate, based on satisfaction of these criteria. In the following paragraphs, we have provided information on the extremely limited potential for exposure during manufacturing, transport, consumption and use.

2. Satisfaction of Requirements

a. Review of Manufacture / Transport / Consumption:

3,4,5,6-Tetrachloro-2-pyridine carbonitrile is produced in a single facility within The Dow Chemical Company's Freeport Operations Site located in Freeport, TX. 3,4,5,6-Tetrachloro-2-pyridine carbonitrile is contained and consumed within the same facility in the production of pesticides.

b. Environmental Fate

The potential for environmental exposure to 3,4,5,6-tetrachloro-2-pyridine carbonitrile is negligible. There are no releases to water or land unless a major plant upset occurred.

Since 3,4,5,6-tetrachloro-2-pyridine carbonitrile is consumed entirely as an intermediate, the downstream processing/use will result in yet a smaller fraction of air emissions that described above during manufacturing. As the residual level of 3,4,5,6-tetrachloro-2-pyridine carbonitrile in downstream products is typically non-detectable and the downstream products are converted into other products, there is essentially no potential for environmental exposure through its use.

c. Human Exposure

The potential for human exposure is also extremely low. Due to the very corrosive nature of 3,4,5,6-tetrachloro-2-pyridine carbonitrile, personal protective equipment is worn during production, maintenance, distribution and processing to ensure no personal contact. Personal protective equipment includes goggles, face shield, hard hat, protective full rubber suit and boots. If maintenance is required in areas where 3,4,5,6-tetrachloro-2-pyridine carbonitrile had been present, the protective equipment would include a full rubber suit, face shield, goggles, and a full face respirator.

3. Conclusion

The Dow Chemical Company believes that the information above fully satisfies the EPA's criteria on site limited intermediates. Further, the above information suggests that there appears to be little additional action that could be taken to prevent any further exposure as the exposure simply doesn't occur.

B. Human Health Effects

There are six mammalian toxicity endpoints in the HPV Program:

- Acute Toxicity
- Repeated Dose Toxicity
- Genetic Toxicity *In Vitro*
- Genetic Toxicity *In Vivo*
- Reproductive Toxicity
- Developmental Toxicity

In an effort to reduce animal testing and to leverage existing data, published and unpublished data for 2,3,4,5,6-pentachloropyridine (CAS No. 2176-62-7), as detailed in the attached Robust Summaries, will be used as a surrogate to satisfy the requirements of all required mammalian testing not already available for 3,4,5,6-tetrachloro-2-pyridine carbonitrile. These two materials have been analyzed through a qualitative structure-activity relationship (QSAR) program. Results of the QSAR indicate that the materials are likely to behave in a similar fashion, and thus the data detailed for pentachloropyridine are conservatively estimated to provide adequate protection from the carbonitrile. Additional testing would be unlikely to change safe handling recommendations for the carbonitrile. Thus, the attached Robust Summaries provide adequate data to characterize the human health effects endpoints under the Program.

C. Ecotoxicity

There are three aquatic toxicity endpoints in the HPV Program:

- Acute Toxicity to Fish
- Acute Toxicity to Aquatic Invertebrates
- Toxicity to Algae (Growth Inhibition)

In an effort to reduce testing and to leverage existing data, published and unpublished data for 2,3,4,5,6-pentachloropyridine (CAS No. 2176-62-7), as detailed in the attached Robust Summaries, will be used as a surrogate to satisfy the requirements of all required ecotoxicity testing.

D. Environmental Fate

Predictive models were used to develop meaningful data for chemicals that are gaseous at relevant environmental temperatures and pressures. The environmental fate data include:

- Photodegradation
- Stability in Water (Hydrolysis)
- Transport and Distribution (Fugacity)
- Biodegradation

In an effort to reduce testing and to leverage existing data, published and unpublished data for 2,3,4,5,6-pentachloropyridine (CAS No. 2176-62-7), as detailed in the attached Robust Summaries, will be used as a surrogate to satisfy the requirements of all required environmental fate testing.

E. Physicochemical Properties

The physicochemical properties include:

- Melting Point
- Boiling Point
- Vapor Pressure
- Octanol/Water Partition Coefficient

Data for physicochemical properties will be summarized from various resources and detailed in the attached Robust Summaries.

IV. TEST PLAN SUMMARY

This test plan is expected to provide adequate data to characterize the human health effects and environmental fate and effects endpoints under the Program.

For reasons indicated in the above paragraphs, we do not believe additional data needs to be generated beyond the studies listed. Due to the nature of the chemical; the manner in which the chemical is manufactured, distributed, processed and used, the product stewardship measures taken to prevent exposure; and existing human/environmental data, we believe that our workers, the public and the environment are well protected from exposure to 3,4,5,6-tetrachloro-2-pyridine carbonitrile.

REFERENCES

1. US EPA. 1999. Determining the Adequacy of Existing Data. OPPT, EPA.
2. DEREK Version 7.0 for Windows, Lhasa LTD, 2003.