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REV 7-20



ESTABLISHED 1802

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

WILMINGTON, DELAWARE 19898

CHEMICALS AND PIGMENTS DEPARTMENT



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April 3, 1987

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91 JUN 26 PM 3:45

Roberta Wedge
Dynamac Corporation
11140 Rockville Pike
Rockville, MD 30852

Re: Methylamines data request.

Dear Ms. Wedge:

Enclosed is information you requested on mono-, di-, and trimethylamine.

Process Description

See attachment 1.

Use Information

The methylamines are used internally and by our customers as raw materials in solvents, agricultural chemicals, water treatment chemicals, surfactants and explosives.

Technical Literature/MSDS

A Storage & Handling Bulletin and MSDS for the anhydrous and aqueous solutions are enclosed.

Toxicity Data

Toxicity Summaries prepared by our Haskell Laboratory on the three compounds are enclosed.

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10/17/95

Occupational Exposure

Attachment 2 is a Job Assignment Description for employees potentially exposed to methylamines during manufacturing and shipping. Attachment 3 is an example of an Occupational Health summary for the methylamines area which provides not only the measured exposures but also the extent of the industrial hygiene practices for the area.

The highest measured level is 2.8 ppm of the monomethylamine for the Solutions Loader. It should be noted that the solutions loading operation is being revised this year to eliminate the potential for employee exposure by installing engineering controls in the form of a closed system with recycle of vapors to storage.

We have no information on exposure encountered by our customers' employees but have included a memo from one of our plants which showed low levels during a dedrumming operation. To assure that our customers can use these products safely we have a "First Order" policy which requires that we ascertain that the customer has the proper equipment and knowhow before we will ship these materials.

We also provide design and start-up assistance in safety, sampling, storage, equipment design and specification and for tankcar and tanktruck unloading. We recommend and most customers have installed enclosed unloading, even for solutions. We require inspections of the facilities prior to and are present at the first delivery. We are preparing a video tape on safe handling for our customer's use.

We recommend that even dilute solutions from spills and process upsets be collected and incinerated and not sewerred because of the danger of fire due to the low flashpoint of these materials. This also serves to reduce the potential for personnel exposure.

The very low odor threshold for these materials plus their "dead fish" aroma serve to alert personnel to leaks quickly and ensure prompt response and repair before high concentrations are reached. In addition, since the aroma is so offensive, off-site releases, if any are quickly reported by neighbors, again leading to rapid response.

Releases to the Environment

Non-condensable gases are collected from all process vessels, storage tanks and the anhydrous amines loading facilities. These are fed to the methylamines vent flare and burned. It is estimated that a maximum of 2.7 lbs/hr and 12 tons/year are emitted from this system. In 1984, it was estimated that 3.3 tons were emitted from the solution loading operation. The solution loading facilities are currently being enclosed and added to this system.

All process waste water and most leaks and spills are fed to the stripper column which recycles the overheads to the reactor and feeds the water fraction to the waste treatment plant. Total nitrogen from the methylamines area fed to the treatment plant is less than 50 lbs/day. It is estimated that there is conservatively a 50% reduction in the treatment plant so the discharge to the river is less than 25 lbs/day of total nitrogen.

Spent alumina-silica catalyst is disposed of in a hazardous waste landfill after steam cleaning to remove residual amines. A slight residual odor remains after that treatment.

If you have any questions on this information, you can reach me on 302-774-9350.

Sincerely yours,



Alan B. Palmer
Manager - Safety, Health and
Environment

ABPalmer/ktb
4/3/87

ATTACHMENT 1

Process Description

See attached diagram.

Raw Materials: Ammonia and methanol plus recycled trimethylamine, ammonia and methanol.

Reactor: Raw materials react to form mixture of amines which are fed to the ammonia column.

Ammonia Column: Ammonia is stripped and recycled; the amines are fed to the TMA column.

TMA Column: TMA is recycled to the reactor or fed to TMA storage. The bottoms are fed to the DI column.

DI Column: DMA and MMA are fed overhead to the MONO column. The bottoms are fed to the stripper column.

MONO Column: DMA and MMA are separated and fed to storage.

Stripper Column: Recycle methanol is recovered and the bottoms are fed to the waste treatment plant.

Vent System: Collects non-condensibles from the tops of the columns, storage tanks and loading facilities and feeds them to the flare stack.

METHYLAMINES PROCESS

