



DOW CHEMICAL U.S.A.

February 18, 1982

LOUISIANA DIVISION
P. O. BOX 150
PLAQUEMINE, LOUISIANA 70764
504 369 8000

Bill Herrick
LHC III
Building 6801

cc: Woody Chew, 6801
Charlie Halphen, 3502-E
John Holloway, 6801
Terry Whitman, 6801

RESPIRATOR CARTRIDGE SHELF LIFE

In response to your recent inquiry on frequency of replacing cartridges in unused respirators, I have summarized below the results of a study done by the U.S. Area Industrial Hygiene Laboratory. Several half-mask respirators with new cartridges were stored in a variety of atmospheres to determine the effect of humidity and background chemical contamination on the service life of the cartridges. At intervals of 4, 6, 10 and 12 months, one of the respirators was withdrawn from each group and tested for time to breakthrough. The test used was essentially the same one used by NIOSH for certification of commercial cartridges. A test atmosphere of 1000 ppm CCl_4 is pulled through the cartridge and the purified air is monitored until it reaches a level of 5 ppm. To pass the test, a cartridge must last at least 50 minutes.

The test conditions are summarized below along with the service life test results.

- Group #1: 55% relative humidity, 23°C
- Group #2: 85% relative humidity, 23°C
- Group #3: Same as #1 plus 150 ppm Chloroethene exposure 6 hr/day 5 days/week
- Group #4: Same as #3 but using 500 ppm Chloroethene
- Group #5: Stored in production plant, 20 - 70% relative humidity, 5 - 30°C, background approximately 30 ppm methyl chloride.

Test Results

- 4 months: All groups passed.
- 6 months: All groups passed.
- 10 months: Group #2 failed, others passed.
- 12 months: Groups #2 and #4 failed, others passed.

AN OPERATING UNIT OF THE DOW CHEMICAL COMPANY

DO 078213
CONFIDENTIAL

Based on this data, I see no reason to discard any cartridges in less than six months. If the respirators are kept in sealed plastic bags to protect them from the high humidity, they would probably be good for up to a year. In the tests described above, the cartridges were left exposed to the atmosphere.

If you have any further questions, don't hesitate to contact me.

Bill

Bill Ledford
Industrial Hygiene

sb