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DOW CHEMICAL U.S.A.

LOUISIANA DIVISION
PLAQUEMINE, LOUISIANA 70764
504 389-8000

INDUSTRIAL HYGIENE REPORT

CHLORINE
ASBESTOS SURVEY UPDATE

FILE NO. 108-8-4

DATE April 8, 1976

AUTHOR Dannie Kennedy

CHECKED [signature]

DATE May 28, 1976

ST01780390

SUMMARY

An asbestos survey was conducted at Chlorine to update the data and determine if any significant changes have occurred since the survey was completed for the last half of 1975.

The samples were collected from the breathing zone. The results ranged from a low of .011 fib/cc greater than five microns in length in the asbestos storage area to a high of .037 fib/cc while an operator was pulping cells. These results are well below OSHA and Dow regulations of 5 and 2 fib/cc respectively (greater than five microns in length).

Whenever asbestos is handled we must observe safe operating procedures and good housekeeping. It is the responsibility of supervision to see that safe operating procedures and practices are enforced.

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CHLORINE

An asbestos survey was conducted at the Chlorine Plant to update data and determine if any significant changes have occurred since the last survey was completed for the last half of 1975.

The asbestos samples were collected from the operators' breathing zone using a 37 millimeter millipore filter mounted in an open face filter holder. The air was drawn through the filter with a Bendix pump, Model C115, calibrated to operate at or near 2 liters per minute.

Slide samples were prepared and observed with the microscope magnification set at 500. All fibers longer than five microns were counted to determine the fiber concentrations.

The asbestos storage area was monitored for five hours and thirty minutes with a time weighted average of .011 fibers per cubic centimeter greater than five microns in length being determined for the time period. Three operators were monitored while pulping chlorine cells to determine what should be peak asbestos exposure conditions in the Chlorine production unit.

S1017838

Monitoring Results

(Results are recorded as fibers per cubic centimeter greater than five microns in length.)

Results	Activity
1) .011	Asbestos pulp storage area at Chlorine Plant - monitored for five hours and thirty minutes.
2) .037	Operator pulping M81 chlorine cells - monitored for two hours and twenty minutes.
3) .023	Operator pulping M81 chlorine cells - monitored for two hours and fifteen minutes.
4) .031	Operator pulping M81 chlorine cells - monitored for two hours.

The monitoring results indicate that conditions are favorable and well within OSHA standards of five fibers per cubic centimeter greater than five microns in length and Dow's standard of two fibers per cubic centimeter. However, anytime asbestos is handled it is imperative that safe operating procedures are followed and good housekeeping is maintained. Supervision is responsible for enforcing these practices.

DOW CHEMICAL U.S.A.

LOUISIANA DIVISION
PLAQUEMINE, LOUISIANA 70764
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INDUSTRIAL HYGIENE REPORT

FILE NO. 109-8-4

DATE April 8, 1976

AUTHOR Dannie Kennedy

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DATE May 28, 1976

CHLOR-ALKALI II
ASBESTOS SURVEY UPDATE

SUMMARY

An asbestos survey was conducted in Chlor-Alkali II to update the data and determine if any significant changes had occurred since the last survey was completed.

The samples, collected from the breathing zone, ranged from a low of .005 fib/cc for an operator performing routine duties in the cell area, with no asbestos pulping involved, to a high of .12 fib/cc for an operator pulping cells. (This was a 30 minute peak sample.)

All samples were below OSHA and Dow's standards, however, we must adhere strictly to safe operating procedures and good housekeeping which supervision is responsible for enforcing.

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CHLOR-ALKALI II

An asbestos survey was conducted in Chlor Alkali II Plant to update data and determine if any significant changes had occurred since the last survey was completed. The asbestos samples were collected from the operators' breathing zone using a 37 millimeter millipore filter mounted in an open face filter holder. The air was drawn through the filter with a Bendix pump, Model C115, calibrated to operate at 2 liters per minute.

Slide samples were prepared and observed with the microscope magnification set at 500. All fibers longer than 5 microns were counted to determine the fiber concentrations. Results ranged from a low of .005 fibers for an operator working in the cell area with no asbestos pulping involved to a high of .120 fibers per cubic centimeter greater than five microns in length, which was recorded while an operator was pulping cells. These results are well below OSHA's standard of five fibers per cubic centimeter and Dow's standard of two fibers per cubic centimeter, however, this standard may be lowered in the future and every effort should be made to keep exposure levels as low as possible.

Monitoring results revealed that operators working the cell area recorded the lowest asbestos exposure. (These samples were taken on routine work days when no pulping was done.) The highest exposure was a thirty minute sample or peak exposure sample taken while an operator was pulping cells. This involves mixing or wetting the asbestos down in an enclosed box and pouring the asbestos in the leaking cells. (See following sheet for monitoring results.)

Results are satisfactory, however, we must adhere strictly to safe operating procedures and good housekeeping, which supervision is responsible for enforcing.

We should re-monitor the operators working their routine jobs in the cell area and also monitor operators for peak exposures while pulping cells to insure that data is adequate and accurate.

S10178383

Monitoring Results

(Results are recorded as fibers per cubic centimeter greater than five microns in length.)

Result	Job Description
1) .030	Operator working the liquifaction area performing routine duties - monitoring time was seven hours.
2) .014	Operator working the cell area performing routine duties - no pulping - monitoring time was seven hours.
3) .041	Operator working the brine area performing routine duties - monitoring time was six hours and ten minutes.
4) .005	Operator working the cell area performing routine duties - no pulping - monitoring time was seven hours.
5) .021	Operator working the power area performing routine duties - monitoring time was one hour.
6) .01	Operator working the cell area performing routine duties - no pulping - monitoring time was seven hours and thirty minutes.
7) .12	Operator pulping cells for thirty minutes. This sample represents a peak exposure sample.

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INDUSTRIAL HYGIENE REPORT

LOUISIANA DIVISION'S SEMI-ANNUAL INDUSTRIAL HYGIENE ASBESTOS EXPOSURE SURVEY FOR CHLOR-ALKALI II, CHLORINE AND THE CHLORINE CELL SERVICE UNIT

CRI NO. LAD-IH-76.03

FILE NO. 112-8-9

DATE September 8, 1976

AUTHOR Dannie Kennedy

CHECKED Charlie Ralph

DATE September 8, 1976

SUMMARY

Employees in three production units of the Louisiana Division were monitored for potential asbestos exposure. Results indicated that no samples exceeded the present threshold limit value (TLV) of 2 fibers/cc greater than 5 microns in length. The two highest exposure levels were recorded while operators pulped cells. A cell operator in the Chlorine unit recorded .86 fibers/cc greater than 5 microns in length and a cell operator in the Chlor-Alkali II unit recorded .49 fibers/cc while performing the same duties. The third highest sample recorded was .41 fibers/cc obtained while a laborer was mixing asbestos and Derakane at Cell Service to repair a cell frame. The remaining samples ranged from a high of .10 to a low of N.D. fibers/cc. (See Data Sheets.)

The results do not exceed O.S.H.A.'s present TLV of 5 fibers/cc or Dow's established TLV of 2 fibers/cc. However, one sample almost doubles O.S.H.A.'s proposed standard of .5 fibers/cc and the other sample very nearly exceeds the now proposed standard.

All safety precautions and safe operating procedures must be strictly enforced to insure minimum exposure levels. Housekeeping is of utmost importance whenever asbestos is used. Supervision is responsible for enforcing all regulations and procedures.

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Problem

O.S.H.A. requires asbestos to be monitored twice annually in any location where it is routinely handled. The Louisiana Division has three such locations. Asbestos is used in Chlor-Alkali II, Chlorine and the Chlorine Cell Service Unit.

Conclusions

Asbestos monitoring revealed that the two highest exposures were found where operators were pulping cells. This activity envolves removing asbestos from bags in an enclosed mixing box, adding water, mixing it into a wet slurry and then dumping the wet slurry into chlorine cells to plug leaks in diaphragms.

The next highest exposure found in the survey was an operator mixing dry 7M and blue asbestos with Derakane to make an adhesive compound used to patch and repair cell frames. These two areas continue to be principal areas of concern and supervision must emphasize and enforce safety precautions.

Recommendations

Good housekeeping, following safe operating procedures and taking every possible precaution is vitally important when handling asbestos. Regular inspections and maintenance of equipment is also essential to maintaining low employee exposures. For example, a broken plexiglass cover was recently replaced on a slurry mix box in the Chlor-Alkali II unit which if left unconnected would have resulted in needless exposure.

Some general safe operating procedures and rules that must be adhered to are: Whenever dry asbestos is handled the operators are required to wear the MSA Comfo Respirator (Type BM 2301 with the asbestos dust cover, or an equivalent mask), rubber gloves and paper suits. (The MSA Comfo Respirator is recommended because it is available at the Stock Department.)

Asbestos should always be handled wet even to the extent of wetting the bag down before opening. Practice good handling techniques to avoid spilling asbestos and make a special effort to prevent asbestos from becoming airborne when handling. Remember that wet asbestos on clothing and tools will eventually dry out and become airborne so take precautions to avoid this happening.

After a job is completed, asbestos waste and empty asbestos sacks should be sealed and labeled in impermeable bags and containers. Never throw the sacks down carelessly as this will add to the problem. The asbestos should never be blown or shook off contaminated suits. It should be vacuumed and placed in the proper designated containers.

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Always wash hands after handling asbestos and nevery carry cigarettes, candy or food in pockets while working with asbestos.

The last point is to always be on the alert for problem areas, report them to supervision and have the area monitored if it is suspect.

Discussion

The carcinogenic properties of asbestos are well accepted and there is a government proposal pending to lower the TLV to .5 fibers/cc greater than 5 microns in length which would reduce O.S.H.A.'s TLV by a factor of 10 and Dow's standard by a factor of 4.

Eighty samples collected since January of 1975, reveals two samples that would exceed this new proposed TLV, however, approximately 10% of the samples were quite near the TLV. The tendency is for most standards to be lowered so it is mandatory that every conceivable action be taken to keep our exposures as low as possible.

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Survey Results (Fibers/cc greater than 5 microns in length.)

Chlor-Alkali II

(1) N.D. Routine duties. Cell operator making rounds through area. Seven-hour sample. No pulping during shift.

(2) .06 Cell operator making routine rounds. Seven-hour sample. No pulping during shift.

(3) .04 Cell operator making routine rounds. Six hours and fifteen minutes. No pulping during shift.

(4) .49 Cell operator pulping cells one hour.

(5) .07 Cell operator pulping cells one hour.

(6) .03 Cell operator pulping cells thirty minutes.

(7) .02 Cell operator pulping cells thirty minutes.

(8) .04 Stationary sample in asbestos storage area. Four hours and fifteen minutes.

(9) .08 Stationary sample in asbestos storage area. Four hours and fifteen minutes.

Chlorine

(1) .10 Cell operator pulping cells for fifteen minutes.

(2) .07 Cell operator pulping cells for fifteen minutes.

(3) .03 Cell operator pulping cells for one hour and ten minutes.

(4) .86 Cell operator pulping cells for two hours and ten minutes.

(5) .02 Stationary sample in asbestos storage area. Four hours.

(6) .01 Stationary sample in asbestos storage area. Three hours and thirty minutes.

(7) .01 Stationary sample in asbestos storage area. Two hours and five minutes.

Chlorine Cell Service

(1) .05 Laborer mixing asbestos and Derakane to patch cells. Three hours and twenty-five minutes.

(2) .03 Laborer mixing asbestos and Derakane to patch cells. Four hours.

(3) .41 Laborer mixing asbestos and Derakane to patch cells. Thirty minutes.

(4) .01 Laborer hooking up M-63 cathodes in the cathode drawing area. Two hours and forty-five minutes.

(5) .01 Laborer hooking up M-63 cathodes in the cathode drawing area. Five hours and fifteen minutes.

(6) .02 Laborer hooking up M-63 cathodes in the cathode drawing area. Seven hours and fifteen minutes.

(7) .02 Dow operator drawing M-63 cathodes in the cathode drawing area. Seven hours and twenty-five minutes.

(8) .05 Dow operator drawing M-63 cathodes in the cathode drawing area. Seven hours and ten minutes.

(9) .02 Dow operator drawing M-63 cathodes in the cathode drawing area. Seven hours and thirty-five minutes.

(10) .02 Stationary sample. Asbestos storage area. Four hours.

(11) .01 Stationary sample. Asbestos storage area. Four hours and fifteen minutes.

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