Air Products

INTEROFFICE
MEMORANDUM

Date 3 APRIL 1975

Subject

To G. J. MANTELL — TREXLERTOWN (Location, Organization, or Department)

From HOWARD L. WATSON — VALLEY FORGE (Location, Organization, or Department)

cc: W. L. Ball
J. T. Barr
C. E. Blades
R. C. Bruno/J. C. Schulter
T. L. Carey
R. Fleming
J. Maerker
W. M. Smith
E. M. Spurlock
A. R. Adams

I received your memo of 24 March wherein you stated;

1.) That the Trexlertown and Piscataway laboratories are not regulated areas.

At the time of this writing, it is my understanding that the Piscataway laboratories have not been found to be above the action level of VCM (.5 ppm). However, from the communication of J. T. Sebastianelli to C. H. Worman, dated 21 March, there is a question as to whether the Trexlertown laboratories are above the action level; or more possibly, a regulated area exists within the laboratory. Until a change in operating procedures has been developed to reduce employee exposure and new monitoring data taken, in accordance with Joe's letter, then the results that Worman took where he obtained a 1.12 ppm reading on Steve Stocker is very damaging. I therefore cannot answer your questions or comments which you stated relative to Trexlertown laboratories until this is cleared up.

2.) It is your understanding at the time of this writing that the Linwood laboratory personnel monitoring has placed them below the action level.

3.) With regard to your policy on medical examinations for; a) New workers b) Present employees, at these locations. I can merely state that at the time of this writing, our Chemicals Group policy is that we will maintain the original VCM examination on a permanent record and they will be coded as "not now employed in an area above the action level".

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For new workers going into these areas, we anticipate no examinations being required, unless the individual being hired has a long history of working with PVC/VCM at his previous employer. In this case, we definitely think the employee should be given the VCM medical examination prior to hire, and the results of this examination would bear a great deal on whether or not the man is hired.

In discussing the above policy with Len Ball, I wish to advise that he has taken issue with it and wrote me a letter concerning it, wherein he recommends that we utilize this examination for persons hired into these laboratories who may be associated with PVC/VCM. Copies of this letter were sent to group management. When I last checked with John Barr and Joe Sebastianelli, I was advised that the policy remains the same as I have stated at this time.

HOWARD L. WATSON

HLW:heg

memo from: WAYNE G. CUSTEAD

RECEIVED
MAR 21 1975
J. T. BARR

March 19, 1975

John Barr
Manufacturing
Valley Forge

John:

While this makes particular reference to treatment, it does support the contention that breathing dry air may not be all that detrimental.

W.

Wayne

WC:vhm
Attach.

Air Products and Chemicals, Inc.
Medical Products Division
HOSPITAL EQUIPMENT

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Kerwin [11] studied 80 patients aged two weeks to three years admitted to hospital with *lower respiratory tract* infections. The children were grouped according to the presence or absence of pneumonia and/or lower airway obstruction. The only difference in therapeutic regimen between the control and experimental groups, was the use of a jet type nebulizer in the latter (airshields croupette). No significant differences were found in the duration of physical signs or hospital course.

Conclusions and recommendations

In general it appears that most people believe that the breathing of dry air may be injurious to the respiratory tract. However, in recent times patients with chronic respiratory disease were often sent to dry desert resorts for therapy. Perversely, we still persist in utilizing humidifiers when the air is cold and dry—this in spite of other data that shows respiratory infections to be uncommon in those people that live in the arctic or antarctic regions where the air by definition is dry.

It is obviously correct to moisten the mucus membrances of the respiratory tract when for one reason or another they are dry. For *upper airway disease*, where the natural humidification process may be abnormal or by-passed, this may be achieved by cold humidifiers or steam, both do seem to play an important role in therapy. *Lower airway disease* may improve with humidification due to the decrease in fluid loss from the lungs with subsequent decrease in viscosity of secretions. This effect however may possibly be achieved by adequately hydrating the patient orally or parenterally (22). *Parenchymal lung disease* is probably unaffected by humidification of inspired air or mist therapy.

At the moment cold humidification can probably best be achieved by means of mist nebulizers in tents or rooms, the ultrasonic nebulizer giving rise to a greater relative humidity than the jet type.

Jet and ultrasonic water particle deposition in the upper and lower respiratory tract is generally poor with nose or mouth breathing, but is enhanced if breathing occurs through a wide oral tube or trachcostomy. Ultrasonic nebulization would have its prime indication under these conditions.

With prolonged cold humidification or nebulization, a favourable environment is created for the growth of bacteria, particularly gram negative organisms (23). Babies in steam tents may have difficulties with temperature regulation and children left naked in cold mist tents may have to utilize extra energy in order to maintain a normal body temperature, aggravating underlying pulmonary or cardiac disease. Moreover, infants receiving volume controlled artificial ventilation, with an ultrasonic nebulizer as the inspired air humidifier, may develop water intoxication (24).

Though neither a decrease in the pulmonary surfactant, nor changes in lung mechanics have been shown to occur with chronic exposure to mist therapy (25, 26), humidification and mist therapy are not without their dangers.

References

1. *Green H.L., Lane W.R.:* Particle clouds: dusts, smokes and mists, p. 40. 2nd ed., E. and F.N. Spon Ltd., London 1964. 2. *Nikiyama S., Tanasawa Y.:* Trans. Soc. Mech. Engr. Japan *62*, 68, 1939. 3. *Hrubecky H.F.:* J. Appl. Physics *29*, 572, 1958. 4. *Mercer T.T., Goddard R.F., Flores R.L.:* Ann. Allergy *23*, 314, 1965. 5. *Mercer T.T., Tillery M.I., Chow H.Y.:* Amer. Ind. Hyg. Assoc. J. *29*, 66, 1968. 6. *Goddard R.F., Mercer J.J., O'Neill P.X.:* J. Asthma Research *5*, 355, 1968. 7. *Wolfsdorf J., Swift D.L., Avery M.E.:* Pediatrics *43*, 799, 1969. 8. *Mitchell R.I.:* Amer. Rev. Resp. Dis. *82*, 627, 1960. 9. *Dautrebande L., Beekman H., Walkenhorst W.:* Arch. Indust. H. *19*, 383, 1959. 10. *Task Group on lung dynamics deposition and retention models.* Health Physics *12*, 173, 1966. 11. *Bau S.K., Aspin N., Wood D.E., Levison H.:* Submitted to Pediatrics, 1971. 12. *Thomson M.L., Short M.D.:* J. Appl. Physiol. *26*, 535, 1969. 13. *Walker J.E.C., Wells R.E., Merrill E.W.:* Amer. J. Med. *30*, 259, 1961. 14. *Bang B.G., Bang F.B.:* Proc. Soc. Exp. Biol. Med. *105*, 516, 1961. 15. *Blanshard G.:* Arch. Middlesex Hosp. *5*, 222, 1955. 16. *Swift D.L., Wolfsdorf J.:* Proc. 5th Int. Cystic Fibrosis Conf., p. 135. Ed.: David Lawson. Published by Cystic Fibrosis Research Trust, 1969. 17. *Miller W.F.:* New Engl. J. Med. *251*, 589, 1954. 18. *Mathews L.W., Doershuk C.F.:* Pediatrics *39*, 176, 1967. 19. *Lifschitz M.I., Denning C.R.:* Amer. Rev. Resp. Dis. *102*, 456, 1970. 20. *Mathews C.W.:* Proc. 5th Int. Cystic Fibrosis Conf., p. 156, 1969. 21. *Kelsch R.C., Barr M., de Muth G.R.:* Amer. J. Dis. Child. *109*, 495, 1965. 22. *Baker H., Griffiths J.C.:* Amer. Rev. Resp. Dis. *97*, 1136, 1968. 23. *Reinarz J.A., Pierce A.K., Mays B.B., Sanford J.P.:* J. Clin. Invest. *44*, 831, 1965. 24. *Herzog P., Norlander O.P., Engstrom C.G.:* Acta Anaesth. Scand. *8*, 79, 1964. 25. *Modell J.H., Giammona S.T., Alvarez L.A.:* Dis. Chest. *50*, 627, 1966. 26. *Modell J.H., Giammona S.T., Davis J.H.:* Anaesthesiology *28*, 680, 1967.

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