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Vinyl Chloride

cc: Mr. C. P. McClelland
Mr. P. G. Magnusson

June 24, 1959

The Pantasote Company
Eleonora Chemical Division
26 Jefferson Street
Passaic, New Jersey

Attention of Mr. J. E. Ertel

Gentlemen:

Your request for information regarding the toxicity of vinyl chloride has been referred to our office. We have surveyed the commonly available literature and I attach two photostats of significant items for your information. There is little else available in published form unless one were to make an exhaustive literature search. Both these texts are written by authorities in the field. Other texts carry the same information and quote the same sources.

Our own experience agrees with these published reports. We have had employees overcome by vinyl chloride to the point of complete loss of consciousness. Removal from exposure resulted in rapid return to consciousness, usually within ten minutes, and a minimum of aftereffects. These aftereffects are the same as those seen after any anesthesia and consist of nausea, vomiting, and headache which may last for one or two hours. Less dramatic exposures which cause only dizziness and mental confusion clear rapidly on removal to fresh air and generally have no aftereffects at all.

The longest period of anesthesia I can recall in an exposed man occurred in an employee who was sprayed with a partially reacted mixture consisting of acetone, vinyl chloride monomer, and vinyl chloride polymer. Sufficient polymer was present to make a varnish like material. During an equipment failure this employee not only breathed high concentrations of the monomer, but also had the varnish sprayed

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onto his hair, face and neck, bare arms and over a thin cotton shirt on his trunk. His exposure to monomer vapors lasted about five minutes at the end of which time he was observed to be staggering and shortly afterwards to collapse in a stuporous state from which he could be aroused only briefly. He was immediately removed to an uncontaminated atmosphere and the medical department was called. On arrival of the medical attendant some three to five minutes later his stupor was more profound and he responded only to painful stimuli. The plant ambulance was called and on arrival about five minutes later the stupor had progressed to moderate anesthesia from which the employee could not be aroused. He was moved to the medical department and the plant physician was called at his home to respond to the emergency. The physician arrived twelve to fifteen minutes later and found the employee to be in deep surgical anesthesia with beginning respiratory muscle paralysis. While preparing respiratory stimulants and resuscitation apparatus, the physician ordered the vinyl covered clothing to be removed and the vinyl resin stripped from the hairy arms while the patient was unconscious and could not feel the discomfort. No sooner had the vinyls been stripped off than it was noted that breathing had improved. Ten minutes later the employee was in light anesthesia and in another five minutes he was talking with those around him. He had one transient spell of nausea in the following half hour and after vomiting felt much relieved and offered to return to work. This was not permitted. He was held under observation in the medical division for the remainder of the shift and since there were no further complaints was sent home in his regular car pool. Complete examination, including liver function studies on the following day, were all found to be normal.

The total period of anesthesia was about forty-five minutes. This case varied from those usually seen in that the anesthesia progressed upon removal from exposure rather than the rapid return to consciousness which is the usual pattern of events. It is concluded that the vinyl resin varnish held vinyl monomer in intimate contact with large areas of the skin and resulted in skin penetration of the monomer in a volume greater than could be excreted through the lungs. Removal of the source of contact resulted in rapid recovery.

We hope you find this information useful. Our experience in a considerable number of cases indicates that no permanent harm results from exposure to vinyl chloride.

Very truly yours,

ASSISTANT MEDICAL DIRECTOR

Carl U. Dernehl, M. D.

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att.

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