

Editorials

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A New Occupational Disease Is Born

The appearance of a new and striking occupational disease should stir up excitement equal to that among the astronomers when a new comet is discovered. Actually, that does not happen. A new occupational disease has appeared but, except for those directly involved, the excitement aroused has been distinctly less than that over the first crocus of springtime.

The new occupational disease is acroosteolysis. This disease is limited to one industry: to the manufacture of a single chemical; and to a single step in the manufacturing process. The industry is the chemical industry; the chemical involved is polyvinyl chloride; and the manufacturing step is the scraping of the reactor vessel walls after the emptying of every batch.

This disease begins with Raynaud's phenomenon which is its characteristic manifestation accompanied or followed by bony dissolution in the distal end of one or more fingers. Occasionally, bony dissolution has occurred elsewhere such as knee caps and iliac bones. On an irregular basis, scleroderma arises and, even less frequently, tinnitus; and there may be some evidence of parathyroid gland disturbances.

In this country, 34 plants manufacture polyvinyl chloride. Perhaps no two plants utilize the same

processes and the same array of ancillary chemicals but all cases have appeared in those plants engaged in the manual scraping of the reactor walls. As many as 227 ancillary chemicals are introduced into the reactors but not more than 25 in any one operation. Other plants that resort to chemical solution of the wall residue have suffered no cases.

The first case of acroosteolysis (AOL) was reported in 1963 but not until the near present time has this disease become commonplace. In one study just completed, which was comprehensive as to this country's total number of plants, 33 cases were recognized subject to the possible addition of numerous borderline cases.

Through what portal the offending chemical enters the body, whether by skin or the respiratory tract, is unknown. Likewise, the minimal length of exposure necessary to causation is not established, but cases have appeared within 30 days of exposure.

The precise chemical or combination of chemicals leading to this disease is unknown. The manufacture of polyvinyl chloride starts with the entry of the monomer vinyl chloride into the reactor. At the present time, there are incomplete indications that the monomer itself is the cause of the affection. In the manufacture of the monomer, some instances of Raynaud's phenomenon have arisen, but in human beings bony destruction has not appeared. Continually, it is stated that the fully polymerized compound is completely inert. A large number of workers exposed only to the granular completed product have been examined by x-ray and there has been no detection of the disease. However, in one illy explored occurrence, a woman worker exposed only for five days to the finished polyvinyl chloride in molten state and working under circumstances that involved cooling with methyl chloride, promptly acquired acroosteolysis along with scleroderma and subsequently died. This instance provides uncertainty that the fully polymerized chemical is completely inert under all circumstances. At this time, it is generally accepted that the polymer is without physiologic action.

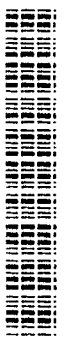
Thus, a new occupational disease is born but not yet has it been fully explored; not yet is its cause precisely known; not yet is the portal of entry established; not yet are any therapeutic measures known.

This new and characteristic occupational disease is to be added to the sum total of occupational diseases approaching 3,000, but of that large number the majority are trivial in consequence and some are rare. In the case of acroosteolysis, that new disease is not rare and, always, its occurrence is significant. It is associated with the manufacture of a widely used plastic, daily seen by most of the public. However, the public in no way is threatened by the advent of this new disease entity.

-Carey P. McCord, M.D.

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