



UNION CARBIDE CORPORATION
CHEMICALS AND PLASTICS

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Engineering Directors
Production Managers
Technology Managers
Engineering Managers
Environmental Protection Coordinators
Industrial Hygiene Managers
Medical Directors
Environmental Protection-Occupational Health Team

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SUBJECT: Acrylonitrile Toxicity

This memorandum is to call attention to certain new findings regarding the toxicity of acrylonitrile and to propose appropriate measures for guarding against possibly harmful exposures.

The acute toxic effects of acrylonitrile are well known and the material accordingly has been regarded and treated as a hazardous chemical. We have now received reports alerting us to the possibility that acrylonitrile may also have the potential for harmful chronic health effects in addition to the previously known acute toxicity. Lifetime feeding studies on rats receiving acrylonitrile in drinking water have shown an increased evidence of tumors at approximately the half-way point of the normal rat life span of about two years. The studies are jointly sponsored by a number of acrylonitrile producers under auspices of the Manufacturing Chemists Association and are being conducted at Dow's toxicology laboratories.

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The preliminary observations from the above studies pertain to the formation of tumor masses and other tissue abnormalities in rats receiving drinking water containing acrylonitrile at concentrations of 35, 100, and 300 ppm. These changes were more prevalent at the higher concentrations but some effects were noted also at the lowest level of 35 ppm. The reports to date do not indicate whether or not the tumors and tissue changes are cancerous.

While these results from feeding relatively high concentrations of acrylonitrile to rats may not be relevant to exposure of humans under normal working conditions, they do indicate a potential for harmful chronic health effects which must not be disregarded. Pending completion of the feeding studies and final analysis of tissue abnormalities, we urge that all reasonable measures be taken to control leaks, spills, and other discharges of acrylonitrile to the environment and to minimize inhalation and skin-contact exposures. Specifically, we recommend (1) maintaining inhalation exposures well below the Threshold Limit Value (TLV) of 20 ppm, (2) using protective clothing whenever there is chance of skin contact with liquid acrylonitrile, (3) strictly observing good operating procedures and industrial hygiene practices, and (4) maintaining the lowest possible concentration of residual unconverted acrylonitrile in products as well as in effluents and other discharges from all operations.

Further significant developments will be communicated as they come to our attention.



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