

Pentachlorophenol — Continued

PCP has been reported to be embryo-lethal and embryotoxic in rats (4) and hamsters (5). To date, PCP has not been shown to be carcinogenic in animals or humans (6). Vapors of this compound are lethal to plants, and owners of PCP-treated log homes may find house plants dying.

Vaporization of PCP, the likely cause of the elevated PCP levels among the log home residents, can be reduced substantially by coating interior log walls made of PCP-treated wood with a sealer such as polyurethane (7). Residents of log homes (up to 30,000 are sold each year) should consult the manufacturer on whether the logs have been treated with PCP.

References

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Methyl Alcohol Toxicity in Teacher Aides Using Spirit Duplicators — Washington

The National Institute for Occupational Safety and Health (NIOSH) recently conducted an investigation in a school district in Washington state to determine if operating duplicators that use methyl alcohol ("spirit duplicators") could cause adverse health effects.

The environmental and medical evaluation, requested by the Public School Employees Union of Washington, was conducted from February 5-15, 1980, in the Everett School District, where 58 spirit duplicators are used by 84 teacher aides in 18 schools. Operating the duplicator involves placing a master copy, on which a reverse image is printed in an alcohol-soluble dye, on the duplicator drum. As the paper to be printed is fed under the drum, it comes in contact with a wick that is saturated with 99% methyl alcohol. As the alcohol-wetted paper comes in contact with the master copy, the alcohol dissolves a small portion of the dye and transfers the image to the finished sheet. The evaporated methyl alcohol may thus result in an inhalation exposure to the operator, and handling freshly duplicated paper may result in exposure by skin absorption.

As part of the investigation, methyl alcohol concentrations were measured in the breathing zone of 21 aides while they were operating duplicators and collating and stapling

Methyl Alcohol Toxicity – Continued

duplicated papers. Measurements were made in 12 of the 18 schools and involved 21 of the 58 duplicators. This grouping represented a cross-section of small and large rooms, rooms with operable and non-operable windows or no windows at all, rooms that had no local-exhaust ventilation, and some that had wall or ceiling fans or kitchen range-type hoods above the duplicators.

The amount of methyl alcohol vapor concentrated in the air during the use of the duplicators with no local-exhaust ventilation ranged from 365 to 3,080 parts per million (ppm) in a 15-minute period. Breathing-zone concentrations around 15 of the 20 machines tested (75%) exceeded 800 ppm, the NIOSH recommended 15-minute exposure limit. With the 11 possible local-exhaust ventilation systems turned on, the concentration ranged from 80 to 1,340 ppm. Only 1 exceeded 800 ppm.

A questionnaire was given to 66 teacher aides and to an equal number of randomly chosen age- and sex-matched teachers. It revealed that 45% of the teacher aides had experienced adverse symptoms the month before the study, compared to 23% of the teachers ($p < 0.025$). These symptoms included blurred vision (reported by 23% of the aides compared to 1.5% of the teachers), dizziness (30% of aides vs. 1.5% of teachers), and headaches (34% vs 18%). Nausea (18% vs. 6%) and skin problems (11% vs. 1%) were also more frequently reported in aides, but these differences were not statistically significant ($p < 0.10$). Although these data are the result of self-reporting, and therefore subject to bias, the 2 groups showed comparable prevalences of symptoms unrelated to methyl alcohol toxicity. The prevalence of cases (a case was defined by various symptom aggregations*) was greater for aides in all 5-year age groups except age 41-45. There was a statistically significant difference for case rates in various age strata, using the Mantel-Haenszel Chi-square test ($p < 0.05$). The attack rate increased according to the amount of time spent at a duplicating machine.

When investigators constructed enclosures around 6 duplicators and used the existing exhaust systems, the breathing-zone concentrations of methyl alcohol ranged from 9 to 130 ppm. These concentrations represented a 90%-98% reduction in the corresponding concentrations as measured with no exhaust systems and a 33%-94% reduction in the corresponding concentrations as measured with the existing systems in use.

Reported by the Hazard Evaluations and Technical Assistance Br, Div of Surveillance, Hazard Evaluations and Field Studies (DSHEFS), NIOSH, CDC.

Editorial Note: Many reports of methyl alcohol toxicity deal with acute effects of ingestion such as blindness, paresthesia, and death. Less severe but still serious effects may result from occupational exposure where the route of exposure is by inhalation or percutaneous absorption. The findings of this investigation indicate the effects of occupational exposure to relatively smaller concentrations of methyl alcohol. This study demonstrates the potential health problem from these exposures, but also suggests that such exposures can be easily controlled by enclosing spirit duplicators and using local-exhaust ventilation. Drawings of 3 suggested enclosure and exhaust designs for these duplicators are available from the Hazard Evaluations and Technical Assistance Br, DSHEFS, NIOSH, Mail Stop F9, 4676 Columbia Parkway, Cincinnati, Ohio 45226.

*Any 1 of the following 4 symptom aggregations constituted a case: visual changes or blurred vision; 2 acute symptoms; 1 acute and 1 chronic symptom; or 3 chronic symptoms. The acute symptoms were headache, dizziness, numbness, giddiness, nausea, and vomiting; the chronic symptoms were unusual tiredness, muscle weakness, irritability, poor memory, and insomnia.

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MORBIDITY AND MORTALITY WEEKLY REPORT

International Notes

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Malnutrition — Somalia

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Since 1977, armed conflict in the Ogaden region of Ethiopia has displaced hundreds of thousands of people, causing most of these to seek refuge in the Somali Democratic Republic. Compounding this situation, a drought has affected Somalia, as well as other countries of the Sahel region. As a result, malnutrition caused by a shortage of protein and calories (protein energy malnutrition) is the major health problem in the area. Approximately 700,000 refugees are settled in 24 camps situated in 4 regions of Somalia. Relief efforts are being coordinated by the Somali government and United Nations High Commission for Refugees. The health needs of the refugees are being administered by the Ministry of Health and voluntary organizations from abroad.

In April 1980, CDC was requested to send a team of epidemiologists to assess the health status of the refugees and to establish a surveillance system that could provide for the ongoing collection of mortality and morbidity data. On arrival, no quantitative data on the refugee camps were available. Following an initial assessment, the CDC team found several major problems: shortage of food and difficulty in distributing it, deficiencies in the quantity and quality of water supplies, lack of available firewood for cooking, and limited supply and inappropriate usage of essential medications.

The major problem affecting refugees was protein energy malnutrition. A cluster sample survey was conducted in camps in 3 of the 4 regions to determine the nutritional status of children measuring 110 cm or less (0-5 years old). Severe malnutrition was found in 3%-6% of children surveyed; moderate malnutrition was found in 19%-24%. No edema was seen in the children surveyed (Table 1). This nutritional status is worse than that observed in the general population during the Sahel drought in 1974 (Table 2). Malnutrition was more prevalent in newly arrived children than in those who had been in camp for longer periods of time.

Demographic surveys of the camps were undertaken. They revealed that 15%-18% of the camps' populations were 0-4 years, 45%-47% were 5-14 years, 29%-33% were 15-44 years, and 6%-8% were 45 years or more. The male-to-female ratio was similar even in the 15-to-44-year age group although there were relatively fewer males in the 15-to-25-year age group.

TABLE 1. Prevalence of malnutrition* in Somali refugee camps in children ≤ 110 cm, 1980

Region	Moderate malnutrition	Severe malnutrition	Sample size
West Galbeed	223 (22%)	63 (6%)	1,004
Hiran	132 (24%)	21 (3%)	553
Gedo	183 (19%)	24 (3%)	949

*Using a weight-for-height reference developed by CDC and the National Center for Health Statistics (1). Moderate malnutrition = 71%-80% of the reference median; severe = $\leq 70\%$ of the reference median.