INDOOR AIR QUALITY
IN SCHOOLS/DAYCARE CENTERS

Because most children in the industrialized world spend a large amount of time in schools and daycare centers, and because environmental factors have been shown to be critical in a child's ability to concentrate and learn, indoor air quality in these facilities has become an increasingly important issue.

The U.S. EPA's 'School Evaluation Program' (SEP) began in 1989 to provide information for diagnostic and mitigation strategies in schools with elevated radon levels. Twenty-six schools across the U.S. have been evaluated. In 1991, investigators reported that "diagnostic data showed a strong trend that radon was not the only indoor air pollutant in these schools." The researchers also reported that, in general, ventilation was "inadequate" and below the current ASHRAE Standard 62-1989 guidelines. The authors of the report stated the following:

> During the process of conducting these evaluations, many schools were found to have disabled or malfunctioning outdoor air supply. Although these schools had been chosen for evaluation because they had been identified as having elevated radon levels, results of these evaluations indicate the need for a new direction in large building radon abatement--a holistic (buildings systems) approach that considers total indoor air quality, comfort, cost and energy issues. (1)

Poor indoor air quality in schools has been called "the asbestos of the '90s." (2) The World Health Organization estimates that 30% of the nation's schools are suffering from the "sick school

syndrome." (3) In fact, according to some, the figure may be even higher for schools. (2)

A recent report from the New York State United Teachers Union suggests that dozens of New York City's schools are poorly ventilated and may present health hazards to children. (4) The union reported evidence of poor ventilation and chemical contamination in approximately one in 10 schools they investigated statewide. (4) The union reported, however, that the actual number of sick schools may be as high as one in two. (5) In Hartford, Connecticut, it has been reported that eight of 30 school buildings were found to have ventilation problems. (6)

Similarly, the authors of a 1990 study of six primary schools reported that "the mean concentration of carbon dioxide was above the recommended value" in all of the schools, indicating poor outdoor air supply. (7) The authors concluded that "sick building syndrome" in schools is a problem of multifactorial origin.

Many scientists appear to believe that schools are especially susceptible to "sick building syndrome," due to the large number of people per room. (2, 8) Budget restraints are also often cited as an important factor in "sick school syndrome." (5, 2, 9) One author reported that a lack of fresh air, improperly applied pesticides, and offgassing from furnishings and carpets are also to blame. Thomas Hobart, the President of the New York State United Teachers Union, reported:

> In many schools, budget cuts have led to poor maintenance, inadequate cleaning and measures

> that were intended to tighten buildings for energy savings but have resulted in poor air quality.(5)

A review of the literature on sick schools reveals that symptoms and complaints include rashes, headaches, respiratory problems, allergic reactions, multiple chemical sensitivity, fainting, eye and throat irritation, an inability to concentrate, stomach aches, fatigue and nausea. (6, 10) As one author stated:

> As most youths in the industrialized world spend a decade or more in schools, impairment of health due to poor quality of indoor air in schools may have implications for the health state of a large proportion of the population. (7)

An informal review of media reports that discuss reported incidents of "sick" schools and daycare centers indicates that problems associated with poor IAQ are usually in large part due to overcrowding, uncleanliness or poor building/HVAC design. In fact, smoking is prohibited in most of these schools. This review did not identify a single instance where ETS exposure was blamed for poor IAQ in schools or daycare centers. The review is evidenced by a chart, attached as Appendix A, which lists a total of 46 schools and daycare centers in 18 states.

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