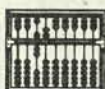


THE RIGHT TO AN EDUCATION TOXIC HAZARDS IN SCHOOLS

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The main body of this article is taken from a speech given to the Chemicals in Schools meeting at Bowraville by Anne Want.

Anne has a deep understanding of the hazards posed by chemicals in schools as her son Andrew has acute chemical sensitivity. What follows is a personal account of their experiences which makes a compelling case against the use of chemicals in schools.

have a faster respiratory rate than adults further adding to the difference. Studies show that children's immature digestive systems also allow them to absorb more toxic chemicals than do adults. A child's brain continues to develop after birth and is affected by neurotoxins. Solvents, which are proven neurotoxins, have been shown to pass the blood-brain barrier.

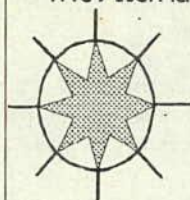
The **Total Chemical Load** that a child can be exposed to in today's twentieth century is enormous. Generally, the studies on the thousands of chemicals about have been performed on individual chemicals. Toxicology generally deals with chronic or acute poisoning on one chemical on its own. The combined effect of 2 or more chemicals can be many times more toxic than each on its own; this is called **Synergism**. This is not researched nor studied by our so-called "authorities". So what is the effect on the body of constant low level exposure of one or many different chemicals?

All products and by-products of the multi billion dollar Hydrocarbon Processing Industry have been endeavoured to be utilised over the years for a variety of products. This has exposed the population to a myriad of synthetic chemicals in everyday products.

By the time my son Andrew was four and a half we had determined a link between his continued ill health and chemical exposures. The demise in his health on

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The development of a child's immune system takes the best part of childhood. The toxicology of substances affecting the immune system is a recent area of study. Many chemicals which have been on the market for years are now being found to seriously weaken or impair the immune system. Unfortunately, insufficient research has taken place with respect to the majority of toxic chemicals before they have been released on the population.

Children have been identified as being at greater risk from chemical exposure because they can absorb a greater amount of chemicals per body weight than do adults. They also

Bowraville Meeting Well Attended

On May 12, 1995 a meeting was held at the Bowraville Community Centre to discuss concerns about the use of chemicals in schools and the risks exposure to these posed to children attending school.

The meeting was chaired by David Leach, and guest speakers were Ann Want and David Hurtado from the Toxin Action Group.

The audience was mostly comprised of parents concerned for their children's health, a concern justified by the information presented.

There was a tendency among teaching professionals to put the whole issue in the too hard basket, especially pest control, however the fact that the information is available must influence future decisions regarding exposure to toxic substances.

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beginning school led me to investigate the various chemical exposures he experienced within the school environment. The findings were alarming and varied. Exposures came from cleaning products, air fresheners, whiteboard markers, paints, glues etc. The removal of such products utilising toxic chemicals from the school environment saw these summarised improvements in Andrew's health:

- * Cessation of headaches and stomach pains he continually complained of.

- * As he no longer felt ill in the classroom, his social and emotional development progressed to a level of normality.

- * His fine motor co-ordination markedly improved.

- * His general health improved as his immune system strengthened.

"The combined effect of 2 or more chemicals can be many times more toxic than each on its own"

Children are exposed to toxic chemicals, in the school environment, from many sources.

There can be many toxins present in the school environment. Effects on children from chemicals mentioned in this article are varied and may produce combinations of the following symptoms:-

- Headaches
- Dizziness
- Fine-Motor Co-ordination Problems
- Gross-Motor Co-ordination Problems
- Depression
- Hyperactivity
- Eye Irritation
- Drowsiness
- Nausea
- Vomiting
- Concentration Problems
- Liver Injury
- Kidney Injury
- Respiratory Problems
- Confusion
- Bedwetting
- Influenza-like Illness
- Throat Irritation

Source NCEC pamphlet.



CLEANING PRODUCTS IN SCHOOL

Some cleaning products are very toxic substances. Hazardous chemicals found in cleaning products include ammonia, benzene, menthylene chloride, glycol ethers etc. Cleaning products are often selected on the basis of economy and effectiveness by individuals who have no training in environmental health.

The product used to clean the tops of the desks in Andrew's classroom contained the solvent *Ethylene Glycolmonobutyl Ether*. This solvent is also found in floor strippers and window cleaners. The toxicology of this solvent is extremely disturbing. Briefly, it has been linked to damage to testes, it causes eye, nose and throat irritation, blood changes, upper respiratory tract irritation and may cause liver and kidney damage. It is readily absorbed by the skin and its uptake by the body is enhanced by the addition of water (cleaners are advised to "dilute" it in water!).

The U.S. Environment Protection Agency (USEPA) cannot recommend a safe level of exposure to ethylene glycol ethers: "...based on current data, EPA is not able to establish molecular size or weight above which there

are no concerns for adverse effects on human health".

Reports have come in, via the trade union, that cleaners from many Coffs Harbour schools have removed these and other toxic cleaning products and replaced them with less toxic alternatives. This action saw reports from teachers, cleaners and parents in the improvement of skin irritations, respiratory problems and nauseous headaches among teachers, cleaners and students.

AIR FRESHENERS

Air fresheners do not "freshen" air (like an open window), they merely interfere with the ability to smell offensive odours. They do that by releasing a nerve deadening agent or by coating the nasal passage with an oil film.

Paradichlorobenzene is a central nervous system depressant used as an air freshener in the toilets and in the cupboards in the classroom (as it was also effective in killing silverfish, moths, cockroaches etc) at Andrew's school. Paradichlorobenzene is absorbed into the body by inhalation and ingestion, exposure may cause headaches, runny nose, eye irritations, liver and lung damage and disruption to the central nervous system. (It is interesting to note that in the urinals, in the toilets, the blocks were within easy reach of young children.)

Paradichlorobenzene is also found in the pharmaceutical Cerumol, an ear wax softener, to be put into children's ears (says a lot for our regulatory system).

The Canadian Centre for Occupational Health and Safety recommends that entry into the water or sewer system be avoided. The World Health Organisation has classed it as a probable human carcinogen.

CLASSROOM STATIONERY

I was called to the school one day to find Andrew in a state of extreme distress, complaining of stomach cramps and feeling sick. His teacher said the onset of his symptoms was rapid and he was deteriorating quickly. Andrew was reacting to the solvent white-board markers being used by the teacher in the next room (the school subsequently purchased water based markers).

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Solvent-based markers and textas can contain such toxic substances as n-hexane and xylene. Exposures to hexane can cause lightheadedness, nausea, eye and nose irritation, giddiness, muscle weakness, dermatitis, numbness in the extremities and chemical pneumonia. Exposures to xylene can affect the central nervous system, eyes, gastro-intestinal tract, blood, liver, kidneys and eyes.

Teachers are at risk of chronic health effects from toxic substances due to their continual exposure. One teacher of 32 years suffered as a result of long term exposure to a multitude of chemicals used in Art education (photography, ceramics, sculpture, textiles, screen printing etc) and used in a poorly ventilated environment. This exposure has left her with chronic fatigue, loss of balance, loss of sensation in the arms and legs, memory loss, scarring of her corneas and unexplained weight loss.

It is interesting to note here that a joint study by the New York State Assembly Safety Consumer Affairs and Protection Committee, the New York State Public Interest Research Group, and the Centre for Safety in the Arts, found that children can use art material that exposes them to carcinogens, mutagens and teratogens. Of 81 art materials found in 10 schools surveyed, only 20 were acceptable.

Solvent-based liquid paper was also used in the school by teachers and students. The solvent used, 111 Trichlorethane, acts as a narcotic and depresses the central nervous system. Acute exposure symptoms include dizziness, inco-ordination, drowsiness and it can also affect the cardio-vascular system. It is

the solvents, once again, which are most volatile and it is these that are readily breathed in and absorbed dermally.

HAZARDS OF SCHOOL MAINTENANCE PROGRAMMES

Paints, varnishes etc can outgass for weeks after application. Significant levels of aromatic hydrocarbons (solvents) were measured in a classroom four weeks after it had solvent-based paints applied and new carpet installed. Andrew's reaction to the solvents was a severe sore throat, aggression and hand-eye co-ordination problems (before I withdrew him from school until the products had outgassed). Observed effects in other children were: flu-like symptoms, aggression, watery eyes, skin irritations, "allergic" children developing new allergies and resumed bedwetting (which was only temporary with the children affected). The Material Safety Data Sheets on the paints and chemicals involved indicated the above symptoms as health effects - including bladder injury for one chemical!

New carpets and adhesives emit toxic chemicals. Once installed they can act as a "sink" for particulates such as pesticides and asbestos, and as a breeding ground for dust mite. Scientists from Andersen Laboratories, Massachusetts, observed neuro muscular and respiratory reactions in mice exposed to new carpet. Mice also showed muscle, kidney

and brain degeneration - many died!

I'll briefly mention here the Abeltex Glazecoat, the sealant that caused ill effects among students and staff in Queensland schools. It is interesting to note that the 1993 data sheet downgrades its toxicity compared to the 1992 data sheet in spite of no apparent changes in its composition. For instance the toxic isocyanate solution mentioned in the 1992 MSDS had been replaced with the words "resin solution" in the 1993 MSDS.

Formaldehyde is a chemical found in thousands of building products. It can be found in carpeting, paints, paneling, desktops, cabinets and other classroom furniture made of plywood and particleboard. It irritates the eyes, nose and throat. It can cause dermatitis, bronchial spasms, olfactory changes (involving nose and smell), aggressive behaviour and hypersensitivity. It is a confirmed carcinogen and a human mutagen. Formaldehyde is also present in shampoo, lipstick, perfume, newsprint, permanent press clothing and cigarette smoke.

PERFUMES

Many children are reacting to the perfumes and after shave lotions their teachers are wearing. About 4 000 different chemicals are used to make perfume, as many as several hundred can be used in just one product. Symptoms triggered by perfume exposure include depression, irritability, memory lapses, inability to concentrate, and mood changes. One particular body spray causes one 12 year old boy to feel nauseous, go pale and falls asleep. It didn't take the girls at school long to work out his problem and they have a lovely time with him! His teachers are still trying to come to grips with his problem. Another young girl, also 12, developed swollen glands and concentration problems whenever she wore the product, she now becomes sick whenever she is exposed to anyone wearing the product.

OUTDOOR AIR POLLUTANTS

According to Robert Phalem, Director of the University of California Air Pollution Health Effects Laboratory, "The health risk from air pollution is as much as six times greater for children than for adults". The location of the

REVIEW OF CHEMICALS IN PUBLIC SCHOOLS.

The Minister for Education and Training, Mr John Aqualina MP, announced on May 3, 1995 that a Chemicals in Schools Review Committee had recently been formed in the Department of School Education.

The Committee has commissioned experts at the University of NSW to conduct a thorough audit of chemical use and exposure in schools and bring policies up to scratch.

The review will examine:

- the use of chemicals in schools including science laboratories;
- materials used in industrial and technologically related school subjects;
- the use of cleaning chemicals; and
- any other chemicals being used in schools.

The audit will identify the types of chemicals used in schools, where they are stored, how they are used and whether appropriate safety procedures are being followed.

Source: John Aqualina's Press Release 3/5/95.



school building is of great importance. Children can be exposed to hazardous chemicals used for nearby agricultural pursuits, or by council in their spraying programme, via spray or vapour drift. Schools can be located near polluting industries such as dry cleaners, garages, landfills, hazardous waste sites, parking lots, bus terminals, air ports, main roads etc.

Some researchers recognise certain changes of behaviour in children as an early sign of toxicity or increased reactivity to environmental chemical exposures. Subtle changes in behaviour may be the result of damage to parts of the central nervous system, resulting in shortened attention span, hyperirritability, aggressiveness, and sensory and motor impairments. Very few educators are aware of these links. Therefore when behavioral problems occur, they often fail to investigate possible environmental causes. ("Informed Consent", Mar/April 1994).

Finally I would like to mention about Environmentally Controlled Opportunity classrooms that are developing in Canada. The first ECO classroom was first built in 1985. They are equipped with filtration systems to remove outdoor pollutants, wooden furniture instead of plastic (which outgasses petro-chemicals) solvent free markers, less toxic cleaning products, perfumes are banned, etc. Student attendance averaged 64% outside the ECO classroom, in the ECO classroom it averages 89%. Students who were failing in traditional classrooms now excel in rooms free of sensitising agents.

Our nations future is determined by our children so their health and their ability to learn should be of major concern. The issue of the effect of toxic chemicals on the health of our children, in the school environment, and the environment at large is one that urgently and seriously needs to be addressed.

EDITORIAL

On taking over as editor of *Environs* the question I kept asking myself was "What have I got myself in for?" This was due, more than anything else, to the high standard of the publication; something for which the previous editor, Carol Margolis, and layout guru, Mike Holland, should be repeatedly congratulated.

The feature story of this issue is *Chemicals In Schools*. This is an issue that is going to get bigger and bigger as the information on the toxic substances our children encounter in the school environment, and the effects they can have, is taken into account by society at large. Ann Want's account of her experience as a parent dealing with the schooling of her acutely chemically sensitive son raises many questions. The one that concerns me is what effect exposure to these substances is having on children who aren't acutely sensitive, and who's symptoms aren't as pronounced or just aren't noticed? How often have reactions to chemicals in schools been dismissed as behavioural problems? Are we providing the best possible environment for our children to develop academically and socially or are we hindering their development? The list goes on and on; we can only hope that the enquiry into chemicals in schools by the State Government addresses all these points. We have a moral right not to be used as guinea pigs for the hydrocarbon processing industry (or any other industry for that matter), and it is high time this right was enshrined in law. The US Environment Protection Authority is forcing the move toward Integrated Pest Management in schools, our EPA should do the same.

Forest issues won't go away. The election of a new State Government does give some hope, and the early signs are promising. The new forest reforms, announced on June 13, are a step in the right direction. More on these next issue, after the smoke settles.

Om Gaia,
Tom.

