

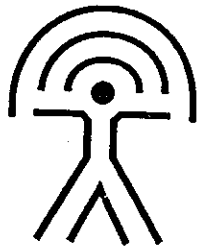
ENVIRONMENTAL HEALTH IN HOSPITAL

A Practical Guide for Hospital Staff

Part I: POLLUTION PREVENTION

L.M. Marshall M.D. F.A.A.E.M. F.R.S.M.
J.G. MacIennan B.A. M.D. F.A.C.A. F.A.A.E.M.

Canadian Society for Environmental Medicine



The Canadian Society for Environmental Medicine

is an incorporated (1985) non-profit foundation dedicated to advancing human health and well-being through:

1. study of the close relationships between people and their environments and important health effects that may result from these interactions;
2. promotion of environmental stewardship to prevent pollution-related illnesses, in collaboration with other similarly motivated organizations;
3. improvement in access to a comprehensive range of medical and social services for individuals adversely affected by environmental exposures;
4. education of the public and health care professionals about environment-related illnesses; and
5. stimulation of, and involvement in, environmental health research.

Environmental Health in Hospital

A Practical Guide for Hospital Staff

Part I: Pollution Prevention

(Part II: Environment-sensitive Care)

This guide is based on current knowledge and parts of it may be changed as new research findings emerge with regard to the effects of environment on health and effective prevention and remediation strategies. Suggestions are offered which may assist refinement of hospital policies that promote and protect patient and staff health, and optimize care for individual patients with environment-sensitive illnesses. It is acknowledged that the available evidence upon which these suggestions are based varies in quantity, type, and quality.

Some suggestions in this guide may not be suitable for some hospitals.

This publication was developed as a collaborative process over several years, and thus in total may not necessarily represent the views of individual contributors.

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The Canadian Society for Environmental Medicine

P.O. Box 62058, Convent Glen Postal Outlet

Orleans, Ontario, K1C 7H8

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Environmental Health in Hospital

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In the 1960's, Dr. J.G. Maclennan, founding member of the Ontario Allergy Society (1958), the American Academy of Environmental Medicine (1965), the Allergy and Environmental Health Association of Canada (1969), and the Canadian Society for Environmental Medicine (1985) originated hospital admission information sheets to assist his allergic and chemically sensitive patients and his medical colleagues.

These information sheets were well-received and formed the basis for the first edition of *Environmental Health in Hospital*, compiled by Dr. L. M. Marshall in 1993 with the input of Dr. Maclennan and other CSEM colleagues. This Guide has been annually updated and expanded as a result of ongoing literature review and feedback from experienced physicians, nurses, other health care providers, and consumers.

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Using this guide:

There are two sections, Part I centred around providing a supportive environment for optimum patient care, and Part II focused on enhancing staff environmental awareness to assist in the provision of optimum care, particularly for those with environment-sensitive illnesses.

An overall summary of suggestions for each part is provided near the beginning of Parts I and II. A summary of suggestions pertaining to each department may be found at the end of the chapter for that department, and may be photocopied and posted on department bulletin boards. The complete guides may be kept in each department for ready reference and/or can be obtained from the designated Environmental Health in Hospital Coordinator(s)(see Administrative Services).

PART I: POLLUTION PREVENTION

Introduction:

Over the last two decades, many countries, including Canada, have noted an increase in childhood asthma (Weiss et al, 1993) that may be related to ground level ozone and fine particles (Bates, 1995; Burnett et al, 1994). Significant associations have been found between respiratory (Burnett et al, 1994) and cardiac (Burnett et al, 1995) admissions to Ontario hospitals and ozone-sulphate air pollution levels, with even very low levels of pollutants increasing admissions (Burnett et al, 1994; Ontario Medical Association, 1998). Association has also been noted between ozone levels and asthma emergency department visits in St. John, New Brunswick (Stieb et al, 1996).

Not only is outdoor air pollution a concern, but also indoor air contamination, because, on average, Canadians spend 90% of the time indoors (Canada Mortgage and Housing Corporation, 1993; Pollution Probe, Canadian Institute of Child Health, 1998). The introduction of energy conservation measures in the 1970's such as 'tightening' buildings and decreasing ventilation rates, in combination with the post-World War II increased indoor use of offgasing synthetic chemical products, have heightened contemporary concern (Kendall, 1994). Canadians are daily exposed to varying quantities of multiple substances in indoor air which are known to impact on human health- for example dust mites, moulds, metals, tobacco smoke, pesticides, and volatile organic compounds such as perfumed products, paints, solvents, and dry cleaning fluid.

It is unknown what percentage of the Canadian population develops symptoms in response to low level exposures to such contaminants as prevalence studies have not yet been mounted in Canada. A National Academy of Sciences workshop suggested that 15 % of U. S. citizens have "increased allergic sensitivity" to these chemicals, "placing them at increased risk of disease (National Research Council, 1987). Statewide telephone surveys of randomly selected adults revealed 6% of adults in California and 2% in New Mexico had been diagnosed with Multiple Chemical Sensitivity or Environmental Illness, and 16% in both states reported they were

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"unusually sensitive" to environmental chemicals (Kreutzer et al, 1999). One third of randomly selected adults in different states indicated they were "especially sensitive" to everyday chemicals (Meggs et al, 1996).

Since the introduction, in the 1980's, of universal precautions against the transmission of infectious diseases through contact with bodily fluids, there has been a marked increase in the use of latex gloves, and apparently some breaches of quality management in glove manufacturing processes. Possibly as a result of this combination of circumstances, there have been increased reports of latex-linked symptoms, some life-threatening (Doctor, 1998; Isman and Ryzynski, 1997; Hunt et al, 1996).

As evidence accumulates for adverse health effects of various environmental exposures, hospitals are being compelled, on moral, legal, and cost containment grounds, to anticipate and deal with the needs of patients and staff with environment-sensitive illnesses. Strategies designed to protect the most vulnerable, especially with respect to indoor air quality, afford the additional advantage of providing cleaner air for all patients and staff, including those with unrecognized allergies and other sensitivities.

Savings from a hospital pollution prevention program result from decreased lengths of stay, increased staff productivity and less absenteeism, protection of facilities and equipment, and reduced waste management costs (Woods, 1989).

Some hospitals may already have some aspects of an environmental program in place, and it is hoped the ideas in this guide will be useful to augment previous efforts.

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Key Suggestions Summary:

Administrative Services:

- Designate Environmental Health in Hospital Coordinator(s), supported by a Committee composed of a designated staff member from each relevant department. Their mandate is to develop, coordinate, maintain, and evaluate the Environmental Health in Hospital Program, including Pollution Prevention and Environment-sensitive Care components. The Pollution Prevention portion includes latex-safe, scent- and smoke-free environment, integrated pest management, as well as environmentally-aware purchasing and materials management.
- Ask employees involved in direct patient contact or who may touch patient linens or supplies, to wear unscented toiletries and cosmetics.
- Train designated admissions staff to facilitate admission arrangements for patients with environment-sensitive illnesses, in conjunction with admitting physicians.
- Designate a private 'clean room' on medical, psychiatric, and surgical wards, and in emergency, outpatients, and day surgery, equipped with Sensitivity and Latex Allergy Kits.
- Use integrated pest management instead of toxic pesticides and herbicides.
- Purchase the products which are likely to have the least immediate and long-term adverse health and environmental impacts (e.g. stop purchasing mercury-containing equipment wherever possible and substitute existing equipment as quickly as possible)
- Incorporate reduction, reuse, and recycling principles into waste management practices.

Public Relations:

- Collaborate with the Environmental Health in Hospital Coordinator(s) to develop in-house communications materials such as policies and employee information/reminders, and assist department heads with setting up program orientation sessions.
- Develop external communication tools such as logos, fact sheets, newsletters, and telephone scripts.

Engineering and Maintenance:

- Minimize patient exposure to outdoor contaminants by careful location of 'clean rooms' away from sources of known air pollutants.
- Use alternative pest management strategies to eliminate/minimize exposure to toxic pesticides.
- Utilize safe renovation practices including application of less sensitizing, irritant, and toxic materials, containment of volatiles, careful waste disposal, and provision of protective equipment for employees.
- Maintain cleanliness and operating efficiency of mechanical ventilation and cooling systems.
- Repair any roof or plumbing leaks within 48 hours, removing wet materials that could act as substrates for moulds.
- Maintain any room air filtration devices (HEPA and charcoal), and shower head filters (particulate and charcoal).

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Housekeeping and Waste Management:

- Ask employees to wear unscented toiletries and cosmetics.
- Identify and use cleaning products which are least likely to diminish indoor air quality, or have long-term adverse environmental impact, and yet are effective. Generally, the safest are unscented, biodegradable, non-aerosol products which, according to WHMIS sheets, do not require personal protective equipment to dilute or apply.
- After cleaning, apply disinfectant (hydrogen peroxide appears least noxious) only in areas needed and in the most dilute form that is effective. Use of quaternary ammonium and chlorinated compounds may be minimized by adding boric acid aqueous.
- Use designated cloths and mops for 'clean rooms'.
- Clean portable humidifiers and dehumidifiers every 48 hours to prevent mould growth.
- Identify and use products with low packaging. Segregate waste to maximize recycling.

Laundry:

- Ask employees not to wear scented products which could be transferred to linens.
- After regulation hospital laundering, rinse linens for patients with environment-sensitive illnesses three times in plain water, and store separately, possibly in designated 'clean rooms'.

Purchasing and Central Supply:

- Purchase the least toxic cleaning, laundry, maintenance, paper, and patient care products with maximum recycling and minimum incineration potential.
- Ask employees not to wear scented products that could be transferred to hospital supplies.
- Have glass-bottled IV fluids available, as well as oxygen, ceramic masks, and hard tubing. Also make available latex-free breathing circuits, gloves, IV set-ups, and bandages.
- Compile Sensitivity Kits and Latex Allergy Kits which staff may order for patients with environment-sensitive illnesses, and which may remain with these patients throughout their hospital stays.

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Administrative Services

Program Development- Some hospitals may already have some aspects of Pollution Prevention and Environment-sensitive Care programs in place. Others will have found it daunting to develop coordinated programs throughout their facilities. Contributors have indicated it is helpful to designate a staff member, usually the In-service Education, Occupational Health, or Infection Control Coordinator, to be responsible for development, coordination, maintenance, and evaluation of the Environmental Health in Hospital Program in collaboration with an 'Environmental Health in Hospital Committee'. Alternatively, one staff member may be made responsible for the Pollution Prevention portion of the program, and another for the Environment-sensitive Care portion. These two staff would then collaborate to coordinate the entire Environmental Health in Hospital Program.

The Pollution Prevention portion of the program includes the following policies: smoke and scent-free environment (IWK Children's Hospital, 1995), latex-safe facility (Isman and Ryzynski, 1997; Hunt et al, 1996), integrated pest management (Rubin, 1989; World Wildlife Fund, 1998; Martin, Ontario College of Family Physicians, 1998), and environmentally aware materials management (Center for Health, Environment and Justice, 1998).

Development would include review of references by the designated Environmental Health in Hospital Coordinator(s), and seeking input from hospital staff on policy formation, in-service education and implementation issues. While staff input is being sought, the Coordinator may be able to identify an employee in each relevant department who seems particularly interested in the program. If the Department Head agrees, the Coordinator can recommend to Administration that this employee be designated as the department representative on the Environmental Health in Hospital Committee, sometimes dubbed 'the green team'. Once the Committee is assembled, the Coordinator will have a resource for ongoing advice as policy statements and communication materials are prepared (Isman and Ryzynski, 1997; IWK Children's Hospital, 1995).

Coordination would involve networking with employees assigned day-to-day management responsibility in departments such as: Administration, Public Relations, Engineering and Maintenance, Housekeeping and Waste Management, Purchasing and Central Supply, Laundry, Food Services, Laboratory, Radiology, Physio and Occupational Therapy, Nursing, Medicine, Surgery, Emergency, Anaesthesia and Respiratory Care.

Maintenance would include educating new employees about the program, periodically updating staff, encouraging the gift shop to refrain from selling scented products and latex balloons, and meeting on request with inpatients who have environment-sensitive illnesses.

Evaluation could include patient and staff satisfaction surveys, as well as tracking of program costs versus length of stay reductions, improvements in employee attendance and productivity measures, facilities and equipment maintenance costs, and waste management costs.

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Admission Planning- Train designated admissions staff to be responsible, in conjunction with the admitting physician, for facilitating admission arrangements for patients with environment-sensitive illnesses. Duties would include answering telephone enquiries, mailing out information about hospital policies for dealing with sensitivities, and arranging preadmission or day of admission meetings to make appropriate preparations. Such meetings allow the patient, accompanied by a relative or friend, to outline special needs to the pertinent hospital personnel who will be responsible for his/her care (e.g. nursing supervisor(s), head housekeeper, dietitian). Such support from staff can do much to relieve apprehensions, and the patient and family can play an important role in supplying necessary food or equipment.

'Clean Room'- A private room is a medical necessity if it is not possible to protect the patient's space from noxious cleaning/maintenance products, latex-containing supplies, or roommates' toiletries, visitors and flowers. Being a medical necessity, a private room should not be charged to the patient.

Ideally, certain rooms, for example infection control rooms, can be designated and maintained as 'clean rooms' on medical, psychiatric, and surgical wards. It is important to locate 'clean rooms' away from high traffic areas, building exhaust vents, parking lots, truck delivery areas, incinerators, laundry rooms, laboratories, and areas recently or regularly sprayed with pesticides. New buildings or recently renovated rooms usually have heightened levels of volatile organic compounds (VOCs) from offgassing building materials or paints, and should be avoided for sensitive patients. Synthetic materials in new furnishings also offgas VOCs whereas metal or non-preserved hardwood does not.

Emergency, Outpatients, Day Surgery Arrangements- Designate and prepare a 'clean room' in each of these departments (see Engineering and Maintenance, Housekeeping and Waste Management sections). Maintain a Sensitivity Kit and a Latex Allergy Kit in each of these rooms (see Purchasing and Central Supply section). The attending physician/surgeon and/or the intake nurse is responsible for identifying those with environment-sensitive illnesses or a past history of adverse exposure reactions, and notifying the department about the need for the 'clean room'.

Pest Management - Since pesticides and herbicides are toxic compounds (Colborn et al, 1993), alternative pest management strategies, which avoid the use of such agents altogether, are preferable (Rubin, 1989; World Wildlife Fund, 1998; Martin, Ontario College of Family Physicians, 1998), for example, aeration of lawns and use of diatomaceous earth. In the occasional circumstance when pesticides or herbicides are deemed necessary, maintenance should notify the Environmental Health in Hospital Coordinator(s) about the planned date of application. The coordinator(s) can then notify the relevant departments so that arrangements can be made to relocate vulnerable patients and staff for a few days to allow for dissipation or biotransformation of these toxins.

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Materials Management- It is important to examine the products purchased for the hospital, and waste management practices with respect to immediate and long-term impact on human health (Center for Health, Environment and Justice, 1998; Working Group, Toronto Board of Education, 1997). For example, alternatives to many mercury, polyvinyl chloride, and perfume-containing products are available and may be requested from suppliers, often at no appreciable cost increase, sometimes even with cost savings. Waste management strategies can incorporate or improve reduction, reuse, and recycling principles (Center for Health, Environment and Justice, 1998).

Suggestions Summary, Administrative Services:

- Designate Environmental Health in Hospital Coordinator(s), supported by a Committee composed of a designated staff member from each relevant department. Their mandate is to develop, coordinate, maintain, and evaluate the Environmental Health in Hospital Program, including Pollution Prevention and Environment-sensitive Care components. The Pollution Prevention portion includes latex-safe, scent- and smoke-free environment, integrated pest management, and environmentally-aware materials management.
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- Use integrated pest management instead of toxic pesticides and herbicides.
- Purchase the products which are likely to have the least immediate and long-term adverse health and environmental impacts.
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Public Relations

Background-Because of their known toxic effects (Colborn et al, 1993; World Wildlife Fund, 1998; Martin, Ontario College of Family Physicians, 1998), several communities in North America have banned the use of pesticides for cosmetic purposes. Concern about adverse health effects of fragrances (Cooke, 1994; Kumar et al, 1995; Anderson and Anderson, 1998; Millqvist et al, 1999) has led some hospitals such as IWK Children's (Halifax) to develop guidelines and promotional material to implement a scent-free policy (IWK Children's Hospital, 1995). Popular press reports have indicated that some government departments, some schools, some churches, and the State of California have instituted fragrance-free zones. Many hospitals, including Women's College Hospital (Toronto) have instituted a latex allergy policy and protocol as part of their Patient Care Manual (Isman and Ryzynski, 1997), which includes a hospital-wide ban of latex rubber balloons. Most hospitals have already banned smoking.

In House Communications- In collaboration with the Environmental Health in Hospital Coordinator(s), develop employee information/reminders (fact sheet, newsletter, posters, buttons, telephone script) regarding the 'scent-free', 'smoke-free', and 'latex-safe' environment, as well as policies on integrated pest management and environmentally-aware materials management.

Assist department heads to explain the need for these policies in program orientation sessions for all current staff.

Train staff how and when to courteously and sensitively approach visitors whose fragrance is having a negative effect on those around them.

Arrange for information and training support for maintenance staff regarding pest management and for housekeeping re environmentally aware materials management.

Facilitate orientation of all new employees on an ongoing basis.

External Communications- Develop scent-free, smoke-free, and latex-safe environment logos, brochures, posters, fact sheets, promotional displays, external advertisements, notices in the hospital's external publications (annual report and newsletters), notices in other external newsletters and local newspapers, notice to physicians, and notice to all patients in pre-admission packages.

Facilitate training of staff to use a prepared telephone script alerting prospective patients and visitors to the hospital's scent-free, smoke-free, and latex-safe policies.

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Recommendations Summary, Public Relations:

- Collaborate with the Environmental Health in Hospital Coordinator(s) to develop in-house communications materials such as policies and employee information/reminders, and assist department heads with setting up program orientation sessions.
- Develop external communication tools such as logos, fact sheets, newsletters, and telephone scripts.