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BUILDING a healthier environment

1. INDOOR AIR QUALITY

Indoor Air Quality (IAQ) has undoubtedly become an important occupational health and safety issue. Recent studies have shown that the air inside homes and commercial buildings can be 2 to 10 times more polluted than outside air¹. As a building owner, operator, or a property manager, it is important to assess the Indoor Air Quality in your building(s) and to examine ways in which it can be improved. Everyone, including building occupants and visitors, is encouraged to play a role in improving Indoor Air Quality in his surrounding environment.

According to Health Canada, Canadians spend close to 90% of their time indoors. Most people, however, are unaware of the effects that poor IAQ can have on their health. The World Health Organization estimates that 1 out of every 3 workers may be toiling away in a workplace that is making them sick.

1.1 What is Indoor Air Quality?

The term "indoor air" is usually applied to non-industrial indoor environments, including office buildings. IAQ problems result from interactions between building materials and furnishing, activities within the building, climate, and building occupants.

1.2 Factors Affecting Indoor Air Quality

A number of factors can affect the indoor air quality of a building or facility: including its physical layout; the heating, ventilation, and air conditioning (HVAC) system; the outdoor climate; the building's occupants; and contaminants both inside and outside the building.

The physical layout of the building and of its HVAC system determines how air moves throughout the building and how much fresh air enters from outside. For example, changing the layout of a building by erecting walls or dividers inside can change the air circulation patterns and lead to poor air circulation or a concentration of contaminants in certain areas. The building's HVAC system is designed to distribute outdoor air throughout the building, remove contaminants and odours, and control the indoor temperature and humidity. A poorly designed or poorly maintained system can cause indoor air quality problems. In the ongoing NIOSH (National Institute for Occupational Safety and Health) investigation of "sick buildings", the percentage of problems attributable to inadequate ventilation continues at 50%, far greater than any other cause.

The outdoor climate can also affect indoor air quality, especially in colder regions. For example to reduce heating costs, many HVAC systems reduce the amount of fresh air brought into the building when the outdoor air is cold. A building's occupants further affect air quality through smoking, cooking, wearing cosmetics or scents, and by producing body odours.

¹ Examining the Relationship between Conventional Cleaning Chemicals and Human Health (and Environmental) Risks – A technical white paper – TerraChoice Environmental Marketing for Avmor Ltd. Copyright 2008.

Indoor air contaminants originate from within a building or are drawn in from the outdoors. These contaminants can lead to IAQ problems, even if the HVAC system is properly designed, well maintained, and functioning properly.

Sources of contaminants inside the building include:

- Dust, dirt or mould in the HVAC system
- Office equipment such as laser printers and copiers
- Office furniture and carpets (potential source of formaldehyde)
- Personal activities such as smoking or cooking
- Housekeeping activities such as cleaning and dusting
- Maintenance activities such as painting
- Spills of water or others liquids
- Special-use areas such as print shops and laboratories

Sources of contaminants from outside the building include:

- Vehicle exhaust
- Pollen and dust
- Smoke
- Unsanitary debris or dumpsters near the outdoor intake

1.3 Common Health Problems Associated with Poor Indoor Air Quality

The Canadian Centre for Occupational Health and Safety notes that occupants of buildings with poor Indoor Air Quality report a wide range of health problems. These conditions are sometimes referred to as Sick Building Syndrome (SBS) or Tight Building Syndrome (TBS), Building-Related Illness (BRI) and Multiple Chemical Sensitivities (MCS). Cost estimates of these illnesses range to billions in absenteeism and lowered productivity.

SBS describes cases in which building occupants experience adverse health effects that are apparently linked to the air or other conditions in a particular building but for which no cause, or specific illness, can be identified. BRI refers to less frequent, but often more serious, illness resulting from conditions in a specific building at a particular time. In these cases, a number of people usually experience a similar set of clinical symptoms and a clear cause can often be found. Legionnaires Disease (lung infection) is an example of BRI caused by bacteria.

A certain percentage of workers may react to the combination of a number of chemicals in indoor air, each of which may occur at very low concentrations. Such reactions are known as MCS. Although some medical organizations have not yet recognized MCS as a disease, it is clear that further research into this condition is needed. It is also widely accepted that poor indoor air quality can be linked to various respiratory problems such as asthma.

Other specific health risks associated with cleaning chemicals include eye and skin irritations, and even cancer. Recent research suggests that between 10-16% of cancers can be related to known cancer-causing substances in conventional cleaning products.²

² Examining the Relationship between Conventional Cleaning Chemicals and Human Health (and Environmental) Risks – A technical white paper – TerraChoice Environmental Marketing for Avmor Ltd. Copyright 2008.



2. WATER QUALITY

2.1 The Impact of Water Quality

As a building operator, owner or property management, it is also important to assess the quality of water in your building(s) as this plays a key role in the health of your occupants and visitors, and also affects costs and productivity. It is key that your building's operational personnel must understand a facility's water supply and sewage treatment systems.

2.2 Phosphate Pollution

Phosphate pollution is an important and costly issue affecting water quality. Phosphates, which are found in many conventional cleaning chemicals, are substances that contain high amounts of phosphorous, leading to blue-green algae production. This condition not only affects our ecosystem, but is also toxic to human health. Toxins caused by blue-green algae may irritate the skin, and even attack the liver or the nervous system.

2.3 Water Conservation

Whether the water supply system is connected to the municipal system or served by a self-contained system, building owners and property managers should investigate opportunities for water conservation.

Simple water conservation measures can reduce consumption, and therefore costs. Conduct a water audit to determine the maximum cost benefit that can be achieved for a water and sewage system. Water conservation measures include metering and charging users by volume, using flow-restriction faucets and low-flush toilet tanks, and reducing the frequency or hours of operation of automatic flushing systems.

3. BUILDING A HEALTHY WORKPLACE ENVIRONMENT

3.1 Everyone Plays a Part: Clarifying Roles and Responsibilities:

Building owners, property managers, building operators, employer and occupants all play a part in maintaining good indoor air quality in the work environment. Health and safety committees, as well as labour union representatives, are often also be involved in resolving indoor air quality issues. Below are some of the roles and responsibilities of each key player:

▪ Building operators:

The building operator is responsible for operating the building's HVAC system. This includes performing preventive maintenance on the system and investigating indoor air quality complaints.

▪ Property managers:

The property manager is responsible for the day-to-day management of the building on behalf of the building owner. Their responsibilities often include indoor air quality complaints, educating occupants about how their activities affect air quality in the building and overseeing air quality investigations.



▪ **Employers:**

In the workplace, it is the employer's responsibility to ensure that the working environment meets the indoor air quality stated in occupational health and safety regulations. When the employer is a tenant in a building, a lease agreement helps to define each party's obligations, including who is responsible for maintaining the ventilation system.

▪ **Occupants:**

Building occupants also have responsibilities relating to indoor air quality. For example, building occupants are responsible for avoiding activities that can contaminate the air, such as smoking and cooking. In some buildings, occupants are able to operate thermostats to control the temperature or open windows. Occupants should inform the property manager or building operators before modifying an office space or adding new equipment that could affect the indoor environment.

3.2 Cleaning for Your Health

A regular cleaning maintenance program is necessary to ensure high indoor air quality as it helps to remove contaminants from the building environment. Cleaning not only gives your building a positive aesthetic, but it is essential to ensure the optimal performance of your employees and occupants, and will improve your bottom line.

To fully reap the rewards of a cleaning maintenance program, safer alternatives to traditional cleaning products should be used. In addition to benefits provided by traditional cleaning, green cleaning promotes health, safety and social consciousness. When choosing green cleaning products, it is important to be aware of the different options on the market, as well as the advantages and disadvantages of each method. Below is a quick review of biological and chemical green cleaning technologies.

Biological Cleaning: A biological cleaning solution uses biological decomposition to clean and deodorize. These solutions harness nature's own processes to recycle waste into simple and essential substances. They meet today's demands for cleaning, odour control, and waste elimination without the use of potentially harmful chemicals.

There are four main advantages to using biological cleaners and odour control products:

- ✓ They are better for the environment and safer for the users and occupants when compared to traditional products;
- ✓ They use highly specialized enzyme producing microbials to clean and control odours by eliminating the soils that traditional chemical products alone cannot treat;
- ✓ They provide residual cleaning up to 80 hours after application and therefore reduce overall labour costs by continuing to work long after application;
- ✓ They help to displace unknown, potentially disease causing bacteria with known, healthy microbials and in this way contribute to our better health.



Chemical Cleaning: Chemical based products can also offer an environmentally responsible method for effective cleaning. For example, Hydrogen Peroxide is particularly attractive because it can break up organic matter and then prevent grease from sticking onto the surface. Other benefits of Hydrogen Peroxide are:

- ✓ Creates no toxic or hazardous byproducts – it breaks down into water and oxygen;
- ✓ Is safe for hard surfaces and textile finishes;
- ✓ Has excellent stain removal properties;
- ✓ Eliminates odours;
- ✓ Improves wastewater quality in sewer systems;
- ✓ Helps reduce biochemical oxygen demand (BOD) and chemical oxygen demand (COD);
 - key parameters in measuring water quality;
- ✓ Can detoxify cyanide, nitrogen compounds, chlorine, bisulfate, phenol and a host of other toxic based waste.

Although biological and chemical technologies differ from one another, they can safely compliment each other. An ideal sustainable cleaning program will take advantage of the strengths of each technology in order to help obtain an effective and more complete clean.

Not all green cleaning products are created equal. Therefore, it is important to do the research in order to ensure that you have chosen the best products for your company or your household's needs. The products you choose should meet the following criteria:

- ✓ **Performance** – Saves time while cleaning effectively and ensures the pristine appearance of your buildings.
- ✓ **People** – Safeguards the health and safety of building operators, custodial staffs, employers, occupants and visitors.
- ✓ **Planet** – Raw materials should be biodegradable and meet the highest environmental standards for safe storage, transportation and disposal. More specifically, materials used should be safe on our water systems and aquatic life.
- ✓ **Price** – Priced competitively when compared to conventional cleaning products in the same categories

In addition, look for products which provide dilution control. By providing accurate dilutions, the cleaning products will perform at their optimal level, thereby maximizing effectiveness, making cleaning easier and less dangerous for your employees, and preventing wastage and residues.

Good customer service, support, and training can be as important as the right cleaning solution. Look for a company who can offer added value and support in the form of hands-on training, sanitation programs, wall charts, proper labels and MSDS sheets. These tools are an integral part of the process of going green because it is crucial that the products you choose are being used properly for optimal performance.



3.3 Being Green

In addition to choosing products which are non-toxic and not harmful to the environment, there are additional steps that you can take, both in your buildings and at home, to protect the health of your occupants and the surrounding environment. For instance, in response to sensitivities and respiratory illnesses, many workplaces have adopted a low scent or scent-free environment policy. Creating a greener workplace entails taking a global approach to improving the environment, through reductions in energy use, water use and waste disposal, in addition to improvements in indoor air quality.

About Avmor Ltd.

Headquartered in Laval, Quebec, Avmor is Canada's leading manufacturer of professional cleaning solutions aimed at the Jan/San and Foodservice markets. Avmor holds a GMP (Good Manufacturing Practices) license, which is a prerequisite to be able to manufacture hand soaps that include disinfection claims and a DIN (Drug Identification number) provided by Health Canada. Avmor offers a full range of hand care products. Avmor's complete line of cleaning products include Cleaners/Degreasers, Floor Care, Washroom Care, Food Service Care, Hand Care, BioMaxx, Disinfectants and others. Some of Avmor's signature brands are Av-mixx Dilution Control System, **Biomor Biological Cleaning Solutions**, Quick Stuff Food Service Cleaning System, Synergy Floor Care and **EcoPure**, its new environmentally responsible sanitation program which features over 25 certified Ecologo products. For over 50 years, Avmor has remained at the industry forefront, defining product performance standards and striving for the safest and most cost-effective cleaning systems for professional use. Avmor Ltd. is a privately held company.

References:

1. Examining the Relationship between Conventional Cleaning Chemicals and Human Health (and Environmental) Risks – A technical white paper – TerraChoice Environmental Marketing for Avmor Ltd. Copyright 2008.
2. Indoor Air Quality: A Guide for Building Owners, Managers and Occupants, Worksafe BC. www.worksafebc.com. Copyright 2005

