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Chapter 1 : Indoor Air Quality Testing Kits from Home Air Check

Indoor air quality is an important area for resear ch and public health policy. Of the pollutants considered, house dust mites and NO 2 are the most important in terms of likely health effects f.

Open in a separate window Abbreviations: All subjects were allergic to grass pollen, as determined by history of seasonal asthma symptoms and allergy skin testing. None were receiving anti-inflammatory therapy or other current treatments. The study was performed outside the grass pollen season. All subjects were nonsmokers. Before the the exposure experiments began, each subject underwent a physical examination. Also, seasonal allergy to grass pollen was confirmed by positive skin prick test performed using a standardized extract including five grass pollen allergens: Blood samples were obtained for analysis of total IgE and eosinophils in serum. Pulmonary function tests were performed and sputum was collected. All subjects were free from upper respiratory infections for at least 4 weeks before the study. Before enrollment in the study, all participants gave written informed consent. The study was approved by the ethical committee of Saint-Germainen-Laye-Hospital project , registered on 9 May The exposures were performed at the same hour hours and occurred on the same day of the week, with an interval of 2 weeks between exposure. The order of exposure to formaldehyde and air-only was double-blinded and randomized. The only member of the research team aware of the type of exposure was the engineer in charge of the injection of formaldehyde into the chamber. The nature of exposure was made known to the other members of the team only after completion of the statistical analysis. Lung function was measured with a spirometer according to the European Community Respiratory Health Survey specifications; measurements were taken immediately before, during, and 8 hr after the end of the allergen challenge. Forced expiratory volume in 1 sec FEV1 and PEF were measured with a portable combined spirometer every 15 min during the exposure to formaldehyde or air-only in the chamber and every hour until the methacholine provocation test, which was performed 8 hr after the end of the allergen bronchial challenge. The air supply passed through both HEPA and activated carbon filters. The formaldehyde atmosphere was created by injecting and diluting saturated vapors from a heated solution of formaldehyde at the exit of the filtration box; these vapors flowed into the ventilation diffuser located in the center of the chamber ceiling. A continuous 1-hr injection of the formaldehyde solution was sufficient to reach a steady state. The formaldehyde concentration in the chamber was monitored continuously with semiconductor gas sensor technology during the experiments to ensure that there was no fluctuation in formaldehyde levels during exposure. The air ejected from the chamber was evacuated outside the building without recirculation. Allergen bronchial challenge Each exposure to formaldehyde or air-only was immediately followed by an allergen inhalation challenge. We used the same standardized extract of five grass pollen allergens as for the skin test Stallergenes Laboratory The initial allergen concentration of standardized pollen extract was 0. The concentration of inhaled allergen was doubled every 15 min; the FEV1 was measured immediately after each doubling and again 10 min after each inhalation. Once it reached that point, inhalation of a higher concentration could continue. Graphical representations of FEV1 and PEF according to time were performed during the 8 hr following allergen bronchial challenge for each of the 24 exposures. PD15FEV1 was estimated without knowing which arm was the treatment arm. Pulmonary function and methacholine-challenge testing We measured responsiveness to methacholine 8 hr after the allergen bronchial challenge ended. All tests were performed with the same dosimeter used for allergen inhalation. The nebulizers were changed after each test. The spirometry technique met international standards, and references values were those of the European Respiratory Society Quanjer et al. Results are given as percentages of predicted values. We assessed airway responsiveness by methacholine challenge testing using an automatic inhalation-synchronized Mefar MB3 dosimeter jet nebulizer Mefar SpA. The cumulative doses administered were 0. A 3-min interval was allowed before each dose increment. FEV1 was measured 1 min after each dose; we used the best of three acceptable measurements to create doseâ€”response curves. Sputum induction and

measurement of inflammatory markers Sputum induction was performed at baseline and immediately after the methacholine challenge with an aerosol of hypertonic saline, following the method of Pin et al. At the beginning of the test and before each period of inhalation, FEV1 was measured for safety. Patients were then asked to rinse their mouth, blow their nose, and cough sputum into a sterile container. The sputum was examined within 1 hr using a modified method described by Pizzichini et al. The entire sputum sample was poured into a Petri dish and inspected for salivary contamination under an inverted microscope; all portions that appeared free of salivary contamination were placed in a preweighed 15 mL polystyrene tube using forceps. Quentin Fallavier, France was freshly diluted in distilled water equal to 4 times the sputum weight and added to the sputum sample. The mixture was vortexed for 30 sec and placed on a bench rocker and rocked for 15 min. Total nonsquamous cell counts were performed in a hemocytometer and expressed as millions per milligram of selected induced sputum. The proportion of salivary squamous cells was noted, and cell viability was determined using the trypan blue exclusion method. From the remainder of the filtrate, 10 cytospins were prepared, air-dried, and fixed. Results were expressed as a percentage of the total nonsquamous count. Slides were coded, and cell counts were performed by an expert observer who did not know the clinical characteristics of the patients. The lower detection limits of the assays were as follows: Questionnaire and postexposure follow-up After 0, 15, 30, 45, and 60 min of exposure to formaldehyde or air-only in the chamber, the subjects were asked 14 questions concerning respiratory symptoms and perception of discomfort i. Subjective symptoms and medication were also recorded. Each subject measured FEV1 and PEF twice daily with a portable combined spirometer during the 2-week interval after each exposure. Results All 12 subjects completed the two exposures and all of the allergen and methacholine challenges. Four subjects reported minor complaints during exposure to both air-only and formaldehyde. One reported nose irritation during air-only exposure, and another subject reported having a runny nose during formaldehyde exposure but no symptoms or discomfort during air exposure. No distinct odor was reported by any subject during exposure to air-only or formaldehyde. No major clinical adverse reaction was observed. The FVC and FEV1 values, measured immediately after formaldehyde exposure, were not significantly different from those obtained after air-only exposure. Formaldehyde versus air-only exposure resulted in a PD15FEV1 that was higher in five patients and unchanged in seven Figure 1.

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Chapter 2 : Protect Indoor Air Quality in Your Home | Indoor Air Quality (IAQ) | US EPA

The objective of this project was to increase the understanding of health impacts of indoor air quality. Especially focus on the assessment of policy relevance of research into the health effects ".

Air quality Clean and safe air in and around your buildings. The quality of air in both indoor and outdoor environments is critical to the health, comfort and well-being of building users. BRE provides a wide range of air quality testing and advisory services to ensure that the air in and around your buildings is of optimum quality and meets regulatory and environmental requirements. Monitoring air quality Measuring air pollutants, including gases, particles and volatile organic compounds VOCs , to demonstrate compliance with health-related and environmental standards and certification schemes e. Improving indoor air quality Identifying and quantifying pollutants, their sources, health risks and the action required. Dealing with odour, damp, ventilation, radon and other air quality problems. Minimising outdoor air pollution impacts Advising on the design and operation of buildings and ventilation systems to minimise the impact of outdoor pollution on indoor air quality, eg by effectively locating ventilation inlets. Dispersing and mitigating pollutants from process emissions. Determining effective stack heights, monitoring air pollutants, and controlling dust from construction and demolition sites. Investigating materials emissions Identifying, measuring and minimising emissions from building components, materials, paints, office equipment, furnishings, combustion appliances and consumer products â€" measurements are carried out to ISO Standard to show compliance with relevant legislation. Measuring ventilation Quantifying building ventilation rates for to compare them with standards and requirements for health. Measuring inter-zonal airflows, for example to prevent the spread of infections. For more information Call us on 88 11 if you would like to know more about our air quality services or would like to discuss a specific air quality issue â€" or email enquiries bregroup. We carried out comprehensive four week programme of surveys, inspections, monitoring and testing to investigate the factors that may have led to ill health among building occupants, assess occupant comfort, and establish whether the school building complied with Building Regulations and contractual and statutory air quality requirements. Thermal comfort assessment temperature and relative humidity. Inspection of heating and air handling systems including controls. Airtightness and air change rate measurements. Lighting assessment daylight; electric lighting; glare; task-based lighting. The findings were presented in a full technical report, and later in person to senior educational officers at the local authority. This included guidance on use of features such as trickle vents and HVAC controls. BRE was later commissioned to undertake follow-up monitoring to verify that remedial actions had been effective.

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Chapter 3 : Effect of Formaldehyde on Asthmatic Response to Inhaled Allergen Challenge

of indoor CO levels across the UK and in different types of housing. It would be prudent to develop strategies to ensure that representative samples of UK dwellings are included in future indoor air quality research.

How much does an indoor air quality test cost? Oct 13, Persistent musty odors, frequent headaches or respiratory issues, or hot and stuffy conditions may indicate that a building or home has indoor air quality issues. According to the US CPSC , "A growing body of scientific evidence has indicated that the air within homes and other buildings can be more seriously polluted than the outdoor air in even the largest and most industrialized cities. Common testing requests include mold and radon testing. Professionals use different mechanisms to capture samples on-site then send them away to a lab for results. If homeowners are concerned about their IAQ, OSHA urges them to watch for symptoms that happen while in the building and go away when they leave. OSHA says to look for symptoms such as headaches or feeling tired. Fever, cough and shortness of breath can be symptoms of a more serious problem. Several factors affect the cost of common indoor air quality testing. All homes and buildings tend to have some mold. The key is to take a wide sample from throughout the home to determine if the mold is extensive enough to negatively affect human or animal health. Here is an example of the cost of air quality testing for mold from MacNaughton: Mold and moisture assessment and testing: Testing is done using the cassette method. Radon testing Radon is a radioactive gas known to cause lung cancer. It is naturally occurring and present in many homes, causing health issues. Certain parts of the country have higher levels of radon than others, but radon can be found in almost every state. Air testing is the key to knowing if this odorless, colorless gas is present in a home or building. Here are some examples of radon testing costs: Professional testing is typically not necessary because the symptoms of carbon monoxide poisoning present quickly. To stay safe, keep homes well ventilated, keep furnaces tuned up , turn gas appliances off when not in use, keep chimneys cleaned , and avoid idling cars inside garages. Home monitors are available to detect carbon monoxide in the air, although they are pricier than other monitoring items such as smoke alarms. How do we know these prices? Millions of people ask Thumbtack for help with their projects every year. We track the estimates they get from local professionals, then we share those prices with you.

Chapter 4 : Environmental Assessment & Consulting | Indoor Air Quality | Hazardous Materials

The Institute for Environment and Health was established by the Medical Research Council adjacent to the Interdisciplinary Research Centre for Mechanisms of Human.

Chapter 5 : Indoor AIr Quality Testing | Ottawa | CO2 VOC& Ventilation Inspection

Get this from a library! IEH assessment on indoor air quality in the home: nitrogen dioxide, formaldehyde, volatile organic compounds, house dust mites, fung, and bacteria.

Chapter 6 : Indoor Air Quality (IAQ) | US EPA

IEH assessment on indoor air quality in the home Nitrogen dioxide, formaldehyde, volatile organic compounds, house dust mites, fung, and bacteria (Assessment ;2) by Medical Research Council (Great Britain).

Chapter 7 : Air quality | BRE Group

47 Humfrey C, Shuker L, Harrison P: Review of levels of nitrogen dioxide in indoor air. in IEH assessment on Indoor Air

Quality in the Home. Assessment A2 Leicester, Institute for Environment and Health,

Chapter 8 : Average Cost of Indoor Air Quality Testing Cost

Ieh: Assessment on Indoor Air Quality in the Home: Nitrogen Dioxide, Formaldehyde, Volatile Organic Compounds, House Dust Mites, Fungi and Bacteria. (Assessment A2). Leicester, Institute for Environment and Health,

Chapter 9 : Air quality test for healthy indoor air - Home Air Check

IEH: Assessment on Indoor Air Quality in the Home: Nitrogen Dioxide, Formaldehyde, Volatile Organic Compounds, House Dust Mites, Fungi and Bacteria. (Assessment A2). Leicester, Institute for Environment and Health, IEH: Assessment on Indoor Air Quality in the Home (2): Carbon Monoxide.