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The Reading Description of Blatn 128s Air Quality Monitor

1. What is PM?

PM stands for particulate matter (also called particle pollution): the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope.

Particle pollution includes:

PM10 : inhalable particles, with diameters that are generally 10 micrometers and smaller
PM2.5 : fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller.

How small is 2.5 micrometers? Think about a single hair from your head. The average human hair is about 70 micrometers in diameter – making it 30 times larger than the largest fine particle.

Sources of PM

These particles come in many sizes and shapes and can be made up of hundreds of different chemicals.

Some are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks or fires.

Most particles form in the atmosphere as a result of complex reactions of chemicals such as sulfur dioxide and nitrogen oxides, which are pollutants emitted from power plants, industries and automobiles.

What are the Harmful Effects of PM?

Particulate matter contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems. Some particles less than 10 micrometers in diameter can get deep into your lungs and some may even get

into your bloodstream. Of these, particles less than 2.5 micrometers in diameter, also known as fine particles or PM2.5, pose the greatest risk to health.

Fine particles are also the main cause of reduced visibility (haze) in parts of the United States, including many of our treasured national parks and wilderness areas.

How Can I Reduce My Exposure to PM?

You can use air quality alerts to protect yourself and others when PM reaches harmful levels:

The reading of BR-smart translates air quality data into numbers and colors that help people understand when to take action to protect their health.

2. What is Formaldehyde (HCHO) ?

Formaldehyde (CH_2 O) is a colorless, highly toxic, and flammable gas at room temperature. It is used in the production of fertilizer, paper, plywood, and some resins. It is also used as a food preservative and in household products, such as antiseptics, medicines, and cosmetics. Exposure to formaldehyde can irritate the skin, throat, lungs, and eyes. Repeated exposure to formaldehyde can possibly lead to cancer.

Where is formaldehyde found?

Formaldehyde is found in:

- Resins used in the manufacture of composite wood products (i.e., hardwood plywood, particleboard and medium-density fiberboard);
- Building materials and insulation;
- Household products such as glues, permanent press fabrics, paints and coatings, lacquers and finishes, and paper products;
- Preservatives used in some medicines, cosmetics and other consumer products such as dishwashing liquids and fabric softeners; and
- Fertilizers and pesticides.

It is a byproduct of combustion and certain other natural processes, and so is also found in:

- Emissions from un-vented, fuel burning appliances, like gas stoves or kerosene space heaters; and
- Cigarette smoke.

How can you be exposed to formaldehyde?

The primary way you can be exposed to formaldehyde is by breathing air containing off-gassed formaldehyde. Everyone is exposed to small amounts of formaldehyde in the air that has off-gassed from products, including composite wood products.

How you can protect yourself and your family from formaldehyde exposure

Reduce formaldehyde products in your home:

Consider purchasing composite wood products with certified

Use air conditioning and dehumidifiers

The rate at which formaldehyde is released is accelerated by heat and may also depend somewhat on the humidity level. Therefore, the use of dehumidifier and air conditioning to control or reduce humidity and to maintain a moderate temperature can help reduce formaldehyde emissions (drain and clean dehumidifier collection trays frequently so that they do not become a breeding ground for microorganisms).

Increase ventilation

Increasing the rate of ventilation in your home, particularly after bringing new sources of formaldehyde into the home, will also help in reducing formaldehyde levels.

3. What is TVOC?

Researchers of indoor air quality usually call all indoor organic gaseous substances they sample and analyze as TVOC, which is the abbreviation of the first letter of the three words Volatile Organic Compound, and the various measured VOCs are collectively referred to as total volatile organic compounds TVOC (Total Volatile Organic Compounds).

TVOC is one of the three types that affect indoor air quality more seriously. TVOC refers to the organic matter whose saturated vapor pressure exceeds 133.32pa at room temperature. Its boiling point is 50 ℃ to 250 ℃. It can exist in the air in the form of evaporation at room temperature. Its toxicity, irritation, carcinogenicity and special odor Sex, will affect the skin and mucous membranes, causing acute damage to the human body. The World Health Organization (WHO), the National Academy of Sciences / National Research Council (NAS / NRC) and other agencies have always emphasized that TVOC is an important type of air pollutant.

The US Environmental Protection Agency (EPA) defines VOC as any carbon-containing compound that participates in photochemical reactions in the atmosphere except carbon monoxide, carbon dioxide, carbonic acid, metal carbides, carbonates, and ammonium carbonate.

Classification

Benzene, alkanes, aromatic hydrocarbons, alkenes, halogenated hydrocarbons, esters, aldehydes, ketones and others.

Source

The main sources of TVOC are outdoor, mainly from fuel combustion and transportation: indoors, mainly from combustion products such as coal and natural gas, smoke from smoking, heating, and cooking, and adhesives, coatings, and paints in construction and decoration materials , Plate, wallpaper, etc., furniture, household appliances, furniture, detergents and human body emissions. There are nearly a thousand kinds.Due to the strong volatility of TVOC, under normal circumstances, 90% of the paint can be volatilized within 10 hours after the paint is applied, while the TVOC in the solvent only releases 25% of the total amount during the air drying process of the paint.

Household products, including:

- paints, paint strippers and other solvents
- wood preservatives
- aerosol sprays
- cleansers and disinfectants
- moth repellents and air fresheners
- stored fuels and automotive products
- hobby supplies
- dry-cleaned clothing

- pesticide

Other products, including:

- building materials and furnishings
- office equipment such as copiers and printers, correction fluids and carbonless copy paper
- graphics and craft materials including glues and adhesives, permanent markers and photographic solutions.

Health Effects

Health effects may include:

- Eye, nose and throat irritation
- Headaches, loss of coordination and nausea
- Damage to liver, kidney and central nervous system
- Some organics can cause cancer in animals, some are suspected or known to cause cancer in humans.

Key signs or symptoms associated with exposure to VOCs include:

- conjunctival irritation
- nose and throat discomfort
- headache
- allergic skin reaction
- dyspnea
- declines in serum cholinesterase levels
- nausea
- emesis
- epistaxis
- fatigue
- dizziness

The ability of organic chemicals to cause health effects varies greatly from those that are highly toxic, to those with no known health effect.

As with other pollutants, the extent and nature of the health effect will depend on many factors including level of exposure and length of time exposed. Among the

immediate symptoms that some people have experienced soon after exposure to some organics include:

- Eye and respiratory tract irritation
- headaches
- dizziness
- visual disorders and memory impairment

At present, not much is known about what health effects occur from the levels of organics usually found in homes.

Levels in Homes

Studies have found that levels of several organics average 2 to 5 times higher indoors than outdoors. During and for several hours immediately after certain activities, such as paint stripping, levels may be 1,000 times background outdoor levels.

Steps to Reduce Exposure

- Increase ventilation when using products that emit VOCs.
- Meet or exceed any label precautions.
- Do not store opened containers of unused paints and similar materials within the school.
- Formaldehyde, one of the best known VOCs, is one of the few indoor air pollutants that can be readily measured.
  - Identify, and if possible, remove the source.
  - If not possible to remove, reduce exposure by using a sealant on all exposed surfaces of paneling and other furnishings.
- Use integrated pest management techniques to reduce the need for pesticides.
- Use household products according to manufacturer's directions.
- Make sure you provide plenty of fresh air when using these products.
- Throw away unused or little-used containers safely; buy in quantities that you will use soon.
- Keep out of reach of children and pets.
- Never mix household care products unless directed on the label.

4. What is CO2?

Carbon dioxide, a carbon-oxygen compound, is a colorless and odorless or colorless and odorless (no smell can be smelled) and slightly sour gas at normal temperature and pressure. It is also a common greenhouse gas or a component of the air (accounting for 0.03% -0.04% of the total atmospheric volume)

Harm

When the concentration of carbon dioxide in the air is less than 2%, there is no obvious harm to people. Exceeding this concentration can cause damage to human respiratory organs, that is, carbon dioxide is not a toxic substance under normal circumstances, but when the concentration of carbon dioxide in the air exceeds a certain limit, it will Poisoning the body

Symptoms of poisoning

Mild: General discomfort such as dizziness, headache, muscle weakness, general soreness, etc.

Moderate: Dizziness will fall to the ground; chest tightness, pain in the nasal cavity and throat, shortness of breath, tightness in the chest and suffocation; severe headache, tinnitus, muscle weakness, red skin, increased blood pressure, fast pulse And strong.