Essential Oils

As demand for natural medicines, flavorings, skin and hair products, and cleaning agents grows, the use of essential oils has increased. Essential oils are the natural metabolic secretions of plants, harvested from the leaves, petals, stems, seeds or roots. Lemon, ylang-ylang, peppermint, and eucalyptus are all examples of plants used to make essential oils.

Cold pressing, distillation that use the steam of water vapor, extraction with solvents or carbon dioxide under pressure are all techniques used to harvest the oils. Extraction requires a large amount of raw plant material to produce a few milliliters of oil. For example, one pound of lavender oil usually takes 250 pounds of the plant.

Health effects

Many consider natural essential oils to be safe because they are derived from plants. However, essential oil concentrations can be at 70–100% as compared to the oil found in the plant at 1%. Workers handling a plant at harvest may experience no skin irritation; however, when a concentrated essential oil is spilled on a worker's bare skin during production, they may suffer intense skin irritation.

Essential oils are readily absorbed through the skin, and skin reactions are the most common types of adverse condition. Contact with essential oils can also damage the eyes. A few essential oils also can damage or kill dividing cells in the body, including those of healthy tissue.

Provided is a review of the most common types of skin reactions from essential oils.

Irritation and delayed allergic reactions

For most, an irritant or allergic reaction will show up within 5 or 10 minutes of an essential oil contacting skin. Symptoms include some or all of the following: redness, itching, burning or pain, and hives. The medical term for the skin reaction to an irritant is "irritant contact dermatitis."

Allergic contact dermatitis is also called delayed hypersensitivity because it does not occur the first time the skin is exposed to the oil. The initial symptoms are pretty much the same for both irritation and allergy; however, irritation reactions tend to resolve within a few hours after removing the exposure and allergic reactions may persist for days or even weeks. Sometimes allergic reactions spread to parts of the body the oil did not contact. Another difference between an irritant and allergic response, is that exposure to a diluted oil may not irritate the skin; however, if you have an allergy to the oil you may still have an allergic reaction even though the concentration of the essential oil is low.

Immediate allergic reactions

For a person who has developed a skin allergy to an essential oil, direct contact can produce a reaction involving red, itchy bumps, known as urticaria or hives, within 10-60 minutes from contact. Although typically a local reaction, it may lead to anaphylaxis. The following are all possible signs of anaphylaxis: difficulty breathing; swollen lips, tongue, or throat; blood pressure drops alarmingly; hives, redness, itching, which may be widespread. Anaphylaxis is a true medical emergency and help should be sought immediately.

Physical hazards and the environment

Some essential oils are extremely flammable, requiring extra precautions for

storage and handling, disposal, or during spill clean-up. In addition, many oils are toxic to aquatic life and should be disposed of in a manner that does not pollute waterways.

Protect yourself when working with essential oils

Review the safety data sheet and the bottle or drum label for the essential oils you work with. Be familiar with the hazards for each oil and seek medical attention if you develop symptoms of exposure.

Ensure essential oils are stored properly so they do not degrade and form additional unknown compounds.

- Containers must be dark glass (brown or blue).
- Store at room temperature; avoid temperature extremes and sunlight.
- Tightly secure the caps after each use to prevent the oil from evaporating and reacting with oxygen.
- All containers must be properly labeled with the contents and concentration.

Basic personal protective equipment (PPE) including a lab coat, long pants, closed-toe shoes, safety glasses, and nitrile gloves should be used to prevent skin contact with oils.

- Insulated gloves should be used when handling heated materials.
- If the eyes can be splashed when pouring, mixing, or other processing activities, use chemical goggles.
- Use a plastic apron for activities where the body can be splashed.

If protective clothing or skin is splashed with essential oils, remove the saturated clothing, wash the skin with mild soap and water to remove any oil residue, and change into clean, dry PPE or clothing. Lab coats and PPE should be laundered at work and not taken home for cleaning.

Ensure a safety eyewash is in those location where workers can be splashed while processing essential oils.

Good ventilation is important when processing essential oil as many can be irritating to the eyes, nose, and respiratory tract. When blending, mixing, heating, or filling bottles, use local exhaust ventilation (LEV) to draw any vapors away from where you are working. LEV may be a permanently installed system with ductwork leading to a fan that exhausts the vapor from the work area, preferably outside the building, or it can be a portable system that draws vapor from the work area, cleans the contaminant using filters or activated carbon or charcoal, then exhausts the clean air back to the building.

If your work activity requires you to evaluate the odor of the essential oil, sniff safely. Test for the odor or vapor of an essential oil by wafting your hand over the container or a sample of the oil on a glass rod, don't sniff directly from an open stock container. Question any oil that has an unusual smell, an uneven consistency, or a strange color. Rancid oil should not be used as it may have degraded.

Ensure workers are trained to clean up essential oil spills. Protecting skin and eye contact should be forefront when selecting PPE, as exposure risk is greater during cleanup. If the oil is flammable, ensure any combustible material used to clean the spill (rags, absorbent material) is placed in a flammable waste container designed to prevent fires, as these materials can spontaneously combust in the trash.

Know what to do if there is a fire during handling or processing of essential oils. Know the locations of fire alarms, fire extinguishers, and other emergency equipment. Exit routes should be reviewed. Fire extinguishers in the immediate vicinity of those locations where flammable oil is used should be rated for Type B materials.

Resources

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