

Essential Oil Safety in Cosmetic Formulation

Essential Oils Are Highly Concentrated

Essential oils are powerful aromatic plant extracts that should be used carefully and conservatively in cosmetic formulations. A single drop contains concentrated volatile compounds that may contribute to irritation, sensitization, or phototoxicity if overused.

Because of their concentration, essential oils should generally not be applied undiluted to the skin.

A Formulator's Perspective on Essential Oil Safety

Joan Morais has been a practicing aromatherapist for over 18 years and has worked extensively with essential oils throughout her cosmetic formulation career and personal life. Through decades of hands-on experience formulating skin, body, and hair care products, she understands both the benefits and the powerful effects of essential oils on the skin and body. Joan has also personally experienced sensitization from products containing excessive levels of essential oils, reinforcing the importance of conservative, thoughtful usage and proper dilution practices in formulation.

Essential Oil Usage in Formulations

Essential oils should be used conservatively in cosmetic formulations due to their highly concentrated nature and the potential for irritation or sensitization when overused.

Conservative Usage Suggestions

Formulation Type Suggested Usage Range

Face Formulations 0.1–0.3%

Body Formulations 1–2%

Hair Formulations 0.3–1%

A general conservative guideline for adult body formulations is approximately:

- **9 drops per 1 ounce (30 mL / 30 g)**
- Approximately **1% dilution**

Why the Type of Formulation Matters with Essential Oils

The type of formulation matters significantly when working with essential oils.

Essential oils are lipophilic, meaning they dissolve best in oils rather than water. Because of this, essential oils are generally incorporated more effectively into anhydrous formulations such as:

- Body oils
- Facial oils
- Balms
- Salves
- Oil serums
- Butter-based products

Water-based formulations such as lotions, creams, gels, sprays, and toners are commonly made with at least 70% water. Since essential oils do not naturally dissolve in water, they require proper incorporation into the oil phase and stabilization within the emulsion system.

Without proper formulation techniques, essential oils in water-based products may:

- Separate from the formulation
- Float to the surface
- Create uneven distribution
- Increase the risk of localized irritation
- Affect product stability

Skin Sensitization and Irritation

Irritation

Some essential oils may contribute to:

- Redness
- Burning
- Itching
- Dryness
- Inflammation

Sensitization

Sensitization may develop over time through repeated exposure to excessive levels of essential oils.

Once sensitized, even small amounts of an essential oil may trigger a reaction.

Examples of stronger essential oils commonly used at very low levels include:

- Cinnamon Bark
- Clove
- Oregano
- Thyme
- Lemongrass

Phototoxic Essential Oils

Some citrus essential oils may increase the skin's sensitivity to sunlight and UV exposure.

Examples include:

- Bergamot (unless FCF/Bergaptene-Free)
- Cold-Pressed Lemon
- Cold-Pressed Lime
- Bitter Orange
- Grapefruit

Use caution with leave-on products intended for sun exposure.

Essential Oils and Babies

For newborns up to 6 months of age, it is generally considered best practice to avoid using essential oils due to their highly concentrated nature and the increased sensitivity of infant skin and developing systems.

Read our post *Natural Baby Skin Care* and download our free eBook *Natural Baby Care* to learn more about gentle, age-appropriate baby care practices.

Essential Oil Drops vs. Weighing

Drops are commonly used in DIY formulation but are not highly precise because drop size varies depending on the bottle, dropper, viscosity, and temperature.

Professional formulators generally prefer weighing essential oils for:

- Better accuracy
- Reproducibility
- Easier scaling
- Improved safety calculations

Drops can still be useful for:

- Small hobby batches
- Learning dilution concepts
- Simple DIY projects

Conservative Use Is Best

More essential oil does not necessarily make a better formulation.

Overuse may:

- Increase irritation potential
- Overpower the scent
- Affect formulation elegance
- Increase sensitization risk

When in doubt:

- Use less
- Formulate conservatively
- Research each essential oil carefully
- Follow IFRA dermal limits when appropriate

Learn More

Learn more about essential oil safety, dilution practices, and how to properly incorporate essential oils into professional skin, body, and hair care formulations through the formulation courses at Joan Morais Cosmetics School and specialized classes at The Formulators LAB.