— A REPORT ON —

using essential oils Safely

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Introduction

Whether you need first aid remedies, therapeutic personal care products , or chemical-free cleaning solutions, essential oils are a wonderful choice. I am glad essential oils are easily accessible to anyone who wishes to purchase them - I only wish they each came with educational material so consumers could learn about the oil and how it is best used. There is no regulated standard, and because of this, it is up to us as consumers to educate ourselves on the proper use of each essential oil before we use them.

Essential oils are very concentrated substances. One drop can be powerful enough to relieve an itchy bug bite, soothe a burn, or stop a cold in its tracks. It is natural to assume that because essential oils originate from plant sources they are without risk, but this is not always the case. Essential oils have the potential to cause minor reactions, such as skin irritation, or more serious consequences like respiratory failure and cancer, when not used appropriately. Some of the major areas of concern include, “overdose, neurotoxins, inhaled allergens, adverse skin reactions, and carcinogens.” (1)

The purpose of this report is to help educate new users in the appropriate use of essential oils so families can stay safe.

Essential Oil Extraction

Essential oils are highly concentrated components extracted from plant matter: flowers, fruit, leaves, resin, twigs, seeds, or roots. There are four ways essential oils are currently being extracted:

Steam Distillation

Steam distillation is the most common method of extracting the essential oil from plant matter. This method involves steaming the plant matter of choice for a determined amount of time, under a specific pressure, and at a certain temperature so as to release the oil. The oil collected is now officially an “essential oil”, and the remaining water is sold as a “hydrosol”.

CO2 Extraction

This method is similar to steam distillation, only liquid CO2 is used instead of water. After the liquid CO2 and the plant matter combine, the CO2 is turned back into a gas, leaving the plant matter and essential oil behind. This provides a different, more pleasant, aroma than you would get from steam distillation, and is often the preferred method of extraction.

Cold-Pressing

This method involves mashing citrus rinds in water. The oil released is separated from the pulpy water and collected as an essential oil. Because pesticides are sprayed right onto the rinds, it's important to seek organic options for cold-pressed essential oils.

Solvent Extraction

Purists don't consider solvent extractions to be true essential oils, and they are typically labeled “absolutes.” This is due to the fact the plant material, usually flowers, are mixed with a solvent. Sometimes there is a significant amount of solvent left behind in the absolute, resulting in a less-pleasant aroma and lesser-quality end product. Traditional aromatherapists generally avoid absolutes, and don't recommend them for pregnant women and children.

It is important to note that all essential oils are considered “pure” after extraction, regardless of the quality of the plant matter used.

Determining Essential Oil Quality

Both the quality and the quantity of therapeutic properties present in an essential oil are affected by the following:

- climate and altitude where it was grown
- quality of soil
- amount of rainfall
- temperature
- how it was harvested
- how it was stored prior to extraction
- time elapsed between when it was harvested and when it was distilled
- the parts of the plant used – leaves, flowers, roots, etc.
- type of distillation equipment used (copper? steel?)
- storage conditions of the oil after distillation, as well as how long it sat before the consumer purchased it

Once distilled, and now "pure," adulterations and other tampering can be done to the essential oils, such as:

Diluting a higher quality, more expensive essential oil species with a lower quality, less expensive essential oil species in the same genus. An example would be mixing *Melaleuca quinquinervia* into *Melaleuca alternifolia* and selling it as Tea Tree Oil.

Blending essential oil with another oil, such as vegetable oil.

Adding natural, or synthetic, constituents to a lower-quality oil to "improve" on the oil medicinally or aromatically. An example of this would be adding linalyl acetate to a low-quality Lavender essential oil.

Remember, any essential oil subject to the above tampering can still be sold as a pure essential oil – or even as "therapeutic grade."

Trustworthy companies will provide thorough and specific information about each oil they sell, including Latin names, chemotypes, country of origin, and GC/MS reports which list the exact components in the essential oil. GC/MS reports are a wonderful tool that allows us to view the chemical components present in the essential oil to determine therapeutic properties.

Chemical Families, Therapeutic Properties, and Safety Considerations

The components that essential oils are made up of are classified into chemical families according to their molecular structure. Knowing the chemical families and their therapeutic properties can really help us learn which essential oils to use for various health concerns. There are also safety concerns within each family that are to be taken into consideration as selections are made. Here is a brief summary of the different chemical families, the therapeutic properties, and any safety concerns. **Keep in mind that essential oils are complex, individually, and may or may not follow along 100% with the chemical family guidelines.**

Monoterpenes

This chemical family is made up of components which evaporate quickly and are considered "top notes" as they are the first aromas to hit your nose in a blend.

Monoterpenes generally are:

- antiseptic – great for cuts
- analgesic – relieves pain
- rubifacient – increases blood circulation
- decongestant – relieves respiratory congestion
- antibacterial (some also antiviral)
- excellent for diffusing – they kill airborne germs
- skin penetration-enhancers – great for getting deep into sore muscles, tendons, and ligaments

Essential oils with more than 60% monoterpenes include: Bergamot, Black Pepper, Cypress, Frankincense, Grapefruit, Juniper Berry, Lemon, Opopanax, Sweet Orange, Ravintsara, Rosemary, and Siberian Fir.

Safety Considerations: Monoterpenes are prone to oxidation and have a shelf life of only 1-3 years. Once oxidized, they can cause skin irritation, and are best discarded (or diffused).

Sesquiterpenes

This chemical family's therapeutic properties are difficult to generalize. Here are some therapeutic actions and the Sesquiterpene-family essential oils generally associated with them:

Anti-fungal: Myrrh, Patchouli, Spikenard
Analgesic: Black Pepper, German Chamomile, Ginger, Myrrh, Ylang Ylang
Antiseptic: Cedarwood, Ginger, Myrrh, Vetiver
Anti-inflammatory: Cedarwood, German Chamomile, Ginger, Myrrh, Patchouli, Spikenard, Ylang Ylang
Antispasmodic: German Chamomile, Ginger, Opopanax, Spikenard
Sedative: German Chamomile, Myrrh, Patchouli, Spikenard, Ylang Ylang

There are really no safety concerns with Sesquiterpenes other than they can be irritating if oxidized. They have a long shelf life of 6-8 years.

Monoterpenols

The chemical structure of Monoterpenols are similar to that of Monoterpenes. The difference? A hydroxyl molecule. The location of this molecule determines the therapeutic property of the oil (isn't that fascinating?).

Monoterpenols have a wide variety of therapeutic properties. Some of these often include:

- strong anti-infectious agents, such as terpinene-4-ol, a chemical component found in Tea Tree
- antibacterial, antifungal, and even antiviral, thanks to linalol, a chemical component found in Lavender and Rosewood
- anti-spasmodic effects thanks to menthol, a primary component found in Peppermint
- anti-fungal action found in Geranium

Some of the essential oils highest in Monoterpenols are: Rose Absolute (93%), Rosewood (91%), Palmarosa (80%), Thyme ct linalol (61%), and Basil (56%).

The only safety consideration in this chemical family is menthol, which can irritate the skin. Menthol should be avoided on children under 5 years of age. Shelf life is 3-5 years.

Sesquiterpenols

The oils in this chemical family are considered “base” notes, as they are physically heavier on a molecular level, and are the last notes to float out of a bottle when you are sniffing a blend. Sandalwood is 85% sesquiterpenols.

General therapeutic properties of Sesquiterpenols are:

- anti-inflammatory
- immune supporting
- sedative
- skin healing
- antibacterial
- antispasmodic
- excellent tonic for lymph system as well as veins

There are no safety concerns with these oils. Shelf life is 6-8 years.

Esters

This chemical family is not only highly antispasmodic, but are also often:

- sedative
- soothing
- analgesic
- anti-inflammatory
- and helps the body deal with stress

Some of the essential oils with the highest percentages of esters are Roman Chamomile (80%), Jasmine Absolute (52%), and Helichrysum (49%).

Esters are generally free from concern, with proper dilution. There are only two components that are best avoided: methyl salicylate present in Birch, and sabinyl acetate present in Juniper oil. Methyl salicylate can be poisonous if used long-term on the skin, and sabinyl acetate can cause liver toxicity. Shelf life is 3-5 years.

Phenols

Phenols are very active and stimulating – an excellent choice when you want to nip an aggressive infection in the bud.

Clove Bud essential oil is 67% Phenols and is the “poster child” of Phenols. Excellent for combating infections, but should be avoided by people on blood thinners due to its high eugenol content.

Base notes, Phenols sticking around longer and making them more apt to irritate the skin. When using high-Phenol oils, dilute well. Use no more than 5 drops per ounce of carrier oil (1% dilution), to prevent irritation on mucous membranes and skin.

Shelf life is 3 years.

Aldehydes

Aldehydes are excellent for fungal issues. Melissa, and it's near-twin, Lemongrass, are two oils right around 80% Aldehydes. Neral and geranial are two specific Aldehydes Melissa and Lemongrass share.

Aldehydes usually have the following therapeutic properties:

- anti-fungal
- antibacterial
- anti-inflammatory
- antispasmodic
- sedative
- and can even reduce fever.

This is another chemical family where low dilution and short-term use is strongly recommended. Dilutions over 1% can result in skin irritation. Aldehydes are most definitely not recommended for internal use ever, even at low doses. People suffering with glaucoma or estrogen-related cancers should be particularly cautious.

Aldehydes oxidize easily and have a shelf life of only 1-3 years.

Ketones

The primary reason to choose oils from the Ketone chemical family would be for respiratory infections, as they are very effective expectorants and mycolytics. Peppermint has more ketones than most other essential oils, although Rosemary, Vetiver, and Spike Lavender have an effective amount as well.

Ketones are also generally:

- analgesic
- antispasmodic
- rubifacient
- cicatrisant
- wound healing

Although Ketones do have components which are non-toxic, there are very real concerns with camphor in particular. Camphor-rich oils should be avoided with children under 5 years of age.

Pinocamphone and isopinocamphone are also neurotoxic, and these components are found in Hyssop (*Hyssop officianalis*).

Also found in Hyssop (*Hyssop officianalis*), as well as Sage, Mugwort, Thuja, and Pennyroyal are pulegone and thujone, potential abortifacients. Do not use if pregnant or around children.

Short-term use of low dilutions (1%) is considered safe. Shelf life is 3-5 years.

Oxides

The most common Oxide component is 1,8 cineole, which is wonderful for respiratory issues. 1,8 cineole stimulates mucous and activates the cilia found in the mucous membranes.

Other therapeutic properties of Oxides generally are:

- antiviral
- anti-fungal
- antibacterial
- can stimulate blood flow to the brain when inhaled

Eucalyptus is your best choice for an Oxide high essential oil, as it contains around 80% Oxides. Rosemary and Laurel Leaf contain around 40% Oxides and are also good choices.

Although Oxides can provide relief to asthmatics, in some people it can set off an attack, and caution must be given. Other safety concerns are skin irritation due to oxidation of oils.

Oxides should be avoided on children under the age of 5. Shelf life is 1-3 years.

Ethers

Ethers have very effective antispasmodic properties.

Some popular ethers are: Anise, Fennel, Nutmeg, and Tarragon.

Safety considerations for the Ether chemical family are high, so these are to be used preferably only when Esters don't work. These safety considerations are: liver toxicity, estrogen-like activity, neurotoxic effects, are psychotropic (influences mood and behavior, as well as affects the brain), and genotoxicity (interferes with DNA).

Specific Ether components and the safety concerns they present are as follows:

- Apiole – oral doses are poisonous, and can cause an abortion in pregnant women.
- Methyl chavicol (estragole) - carcinogenic in rats, likely to cause cancer in humans. High percentages of estragole are found in Tarragon, Hzvozo Bark, and Tropical Basil.
- Methyl eugenol – high doses are carcinogenic.
- Trans-anethole – Avoid if pregnant or breastfeeding. This component is found in high concentrations in Anise and Fennel essential oils.

Of all chemical families, Ethers present the most serious safety issues. This is concerning because many people see the names of herbs, such as Fennel, Basil, and Nutmeg and are less concerned with dosage due to their familiarity and often frequent use of these herbs..

Latin Names Do Matter

Knowing the Latin name of the essential oil you have can help you distinguish between different species of the same genus. There are certain species of essential oils that require more caution when using, and knowing this information can also help you make better therapeutic choices.

Eucalyptus, for example, has at least four different species: *Eucalyptus radiata, Eucalyptus globulus, Eucalyptus citriodora, and Eucalyptus dives.* The first three of these are safe for pregnant women to use, but *Eucalyptus dives* is not due to high ketone content.

Lavender is another example of an essential oil with different species. If you're looking to relieve a headache, *Lavandula latifolia* (Spike Lavender) is the one you want, where *Lavandula angustifolia* (Lavender) is best used for its antispasmodic effects. If you have epilepsy, you'll want to avoid *Lavandula latifolia,* where *Lavandula angustifolia* is a safe choice.

Some companies do not have these Latin names clearly labeled on the bottle. If you order online, make sure you read the description on the website so you are clear on what you are getting. Some companies may be unclear by the common name they choose to use. All species of Rosemary, for example, are sold under the name “Rosemary.”

Not all essential oils have multiple species, however. And some species will have their own unique common name.

For example *Melaleuca alternifolia* is always referred to as Tea Tree essential oil. Another species of the same genus, *Melaleuca quinquinervia,* is referred to as Niaouli. This provides distinction between the two species, which have different therapeutic properties, and prevents any confusion that may be caused by calling them both Melaleuca.

The Importance of Knowing Chemotypes

Some species of plants have the genetic ability to generate different chemical constituents due to the environment in which it resides. These different chemical types of the same genus and plant are called “chemotypes.” Knowing the chemotype of your essential oil is important, as they can contain different therapeutic properties and safety considerations.

Although not all plants have chemotypes, Rosemary is one that does. *Rosmarinus officinalis* is an example of a plant species that can provide different therapeutic properties depending on both the growing conditions and the country it is growing in.

To distinguish different chemotypes, the shortened form of “chemotype” is written as “ct.,” and then the name of the chemotype is presented at the end of the name. For example, the “camphor” chemotype is written as “Rosemary ct. camphor,” or when using the Latin name it is shown as, *Rosmarinus officinalis* ct. camphor.

Let's take a look at Rosemary's chemotypes and how they differ:

Rosmarinus officinalis ct. camphor – high in ketones, a good choice for muscle aches and pains. Diuretic properties, provides rheumatism relief, is a circulatory stimulant, anti-spasmodic, and breaks down mucous in the lungs. Ideal for adding to massage blends.

Rosmarinus officinalis ct. 1,8-cineole – high in oxides, making a great pick for respiratory issues due to its ability to reduce mucous. Antifungal, antibacterial, and antiviral; increases cerebral blood flow; anti-spasmodic; and decreases inflammation. Another perk about this chemotype is that it works well as a skin penetration enhancer. This chemotype is the best of all three for respiratory issues. It would also be great added to your shampoo and massaged into the scalp to both restore vitality and increase blood flow to the brain.

Rosmarinus officinalis ct. verbenone – high in ketones as well as monoterpenes. Verbenone is an excellent cell regenerator for the skin, is anti-spasmodic, and is good at combating respiratory issues at the same time. Best choice for skin. Since it is less “stimulating” than the other two types, verbenone is your chemotype of choice for night-time.

Thyme is another example. *Thymus vulgaris* ct. thymol is excellent for killing bacteria and viruses, but can be very irritating to the skin if not properly diluted. It is not a good idea to inhale this chemotype or use long-term.

Thymus vulgaris ct. linalol, on the other hand, is also anti-infectious, but is not irritating to the skin and can be used long term.

If you are looking for a chemotype that provides a specific therapeutic property, be sure you check the label carefully to see if the chemotype is identified. If not, find the website of the brand you purchased, and see if you can find it there. Reputable companies always provide this information, as they realize the value of knowing the difference between chemotypes.

Properly Diluting Essential Oils

As we just learned, even essential oils with strong safety concerns can be used safely if properly diluted. Knowing how to dilute properly will help us use essential oils safely.

Concentrated substances are rarely intended for use "as is" - and essential oils are no different. There is almost never a time when you would *not* want to dilute the potency of an essential oil. Diluting essential oils is done by adding a drop (or more) of the essential oil into a carrier oil, such as jojoba oil (more on carrier oils next). This not only provides a good medium for the oil to absorb into the skin, but spreads the oil over a larger surface of your skin for more effect.

How much to dilute really depends on the issue you are wanting to address. Here is a handy guide for diluting essential oils:

1% dilution (1 drop per teaspoon of carrier oil; 5-6 drops per ounce) – for children under age 6, pregnant women, elderly adults, those with sensitive skin, compromised immune systems, or other serious health issues. This is also the dilution you want when you are massaging over a large area of the body.

2% dilution (2 drops per teaspoon of carrier oil; 10-12 drops per ounce) – ideal for most adults and in most situations. This is also a good dilution for daily skin care.

3% dilution (3 drops per teaspoon of carrier oil; 15-18 drops per ounce) – best used short-term for a temporary health issue, such as a muscle injury or respiratory congestion. Up to 10% dilution is fine, depending on the health concern, the age of the person, and the oils being used.

25% dilution (25 drops per teaspoon of carrier oil; 125-150 drops per ounce) – occasionally a dilution of this strength is warranted. This might be for a muscle cramp, bad bruising, or severe pain.

Using oils "neat" (undiluted) – Lavender is one of the few essential oils that can be used neat, on occasion, and only for short-term use. A bug bite, burn, or wound, might be a good reason to use Lavender neat. Just use caution when using undiluted, as some individuals can experience irritation or sensitivity when essential oils are used neat.

Keeping safe use of essential oils in mind, always use the lowest dilution possible that gives you effective results.

What Carriers to Use

Choosing a carrier oil (or lotion or butter) to use with essential oils is more than personal preference. The kind of carrier you use can not only affect the absorption rate, but can also enhance therapeutic properties of the essential oil(s) you are using.

Lotions

Due to their high water content, lotion is a good choice for situations where you want fast absorption. The water in lotion quickly evaporates, and makes it ideal for injuries such as sore muscles and joints.

Choose a high quality, organic lotion, such as one made from a mixture of water and organic ingredients such as oils and even butters or beeswax. Arnica lotion makes a wonderful base for anti-inflammatory muscle blends.

Avoid lotions made with petroleum-based oils or synthetic fragrances.

Oils

Oil is a great choice for massages, as it is not as quick to absorb into the skin as a lotion, and provides a good medium for a good, long, rub. Thicker than lotion, oil is heavier and allows the essential oils to linger longer on the skin.

Here are some of the more popular oils and the therapeutic properties they provide:

Jojoba oil (technically a wax) is a great carrier oil choice due to it's light aroma close resemblance to our skin's own natural oil. Not only is jojoba oil moisturizing, its anti-inflammatory properties make it a perfect base for a muscle rub. Most carrier oils have a 6-12 month shelf life, but jojoba oil's antioxidant properties prevent this oil from going rancid.

Avocado oil is another favorite carrier oil, and has a mild aroma. This oil is a wonderful choice for dry, wrinkled skin due to its ability to improve the skin's elasticity and increase hydration. Avocado oil is also ideal for use in an anti-scar blend as it promotes cell regeneration. Avocado oil provides relief from arthritis pain and surface inflammation.

Baobab oil contains all the wonderful properties of jojoba and avocado oils with the added bonus of being full of essential fatty acids that are beneficial for cell health.

Excellent choice for eczema, psoriasis – and even scars – due to its ability to quickly regenerate cells.

Coconut oil can be quite firm, depending on ambient room temperature (although **fractionated coconut** oil is liquid at room temp). I personally enjoy using coconut oil for massages in low light, as it is easy to scoop out of a small mason jar and less likely to spill. Excellent choice for sensitive skin and won't clog pores.

Tamanu oil is a wonderful choice for burns and severe cuts due to its natural germicidal and analgesic properties. It helps new tissue form, keeping it free from infection and inflammation. Another good choice for scars.

Trauma oil is my favorite carrier oil for the bumps and bruises my children get. A wonderful combination of Arnica, Calendula, and St. John's Wort, trauma oil provides pain relief, is anti-inflammatory, and heals damaged tissue.

Butters

The best option for when you want essential oils to slowly absorb over a longer period of time.

Some examples of butters are shea butter, cocoa butter, and kombo butter.

Shea butter makes a wonderful base for lip balms and even deodorant. An excellent moisturizer, shea butter is perfect for dry heels, stretch marks, and a wide range of skin issues.

Cocoa butter not only has a pleasant aroma, but has antioxidant properties. As a fat, cocoa butter repels water, creating a breathable “seal” which softens the skin. Cocoa butter also contains a decent amount of vitamin E, and acts as a lubricant. Especially helpful for treating fine-line wrinkles around the mouth and eyes.

Kombo butter is dark and sticky and similar to coconut oil in consistency. Its anti-inflammatory, anti-allergic, anti-fungal, anti-septic, and antioxidant properties make this butter perfect for achy joints and muscles.

Safety Considerations for Carriers

Shelf life must be taken into account when pre-mixing blends. Carriers generally only last 6-12 months, while essential oils can last for up to 8 years. Making a large batch that you can't get through before the carrier oil goes rancid is not recommended; mixing smaller batches is advised.

Avoid using canola, soy, and most vegetable oils, as they contain omega-6 oils which are not healthy oils.

Toss out any oil that has become cloudy, has a foul odor, or goes rancid.

Avoid refined, processed, non-organic oils. Purchase raw and organic whenever possible.

Note: Water is not recommended as a carrier, as it does not effectively mix with essential oils.

Phototoxicity

Phototoxicity, or photosensitization, is a reaction caused when essential oils on the skin are exposed to UV light – whether from the sun or from a tanning bed. Reactions can be severe, and even permanent. Here are some of the signs of phototoxicity:

- severe sunburn
- blistering
- changes in the color of your skin
- edema (swelling)

These reactions can occur up to two days after phototoxic oils are applied to skin and exposed to UV light.

The following essential oils *are phototoxic*, although in varying degrees:

- Bergamot
- Bitter Orange
- Grapefruit
- Lemon (cold pressed)
- Lime (cold pressed)
- Opopanax

The following citrus essential oils *are not phototoxic*, contrary to popular thought:

- Lemon (steam distilled)
- Lime (steam distilled)
- Mandarin
- Sweet Orange
- Tangerine

You can still use essential oils labeled “phototoxic” as long as you do so safely.

Here is a list of essential oils along with the *maximum number of drops allowed* per ounce of carrier oil before they will cause phototoxic reactions:

- Bergamot – 1 drop
- Bitter Orange – 8 drops
- Grapefruit – 24 drops
- Lemon (cold pressed) – 12 drops
- Lime (cold pressed) 4 drops
- Opopanax – unknown

Note: using phototoxic essential oils in a soap or by other means which you wash them off does not put you at risk for phototoxicity. It's only when they remain on the skin during skin exposure.

Inhaling Essential Oils

Although skin issues are most effectively dealt with topical use, some health issues are best addressed by inhalation use. Insomnia, respiratory congestion, and emotional health are examples of when inhalation is ideal.

Steam inhalation offers a significant absorption of essential oils, but for a short time. One or two drops of Eucalyptus and/or Rosemary in a steaming bowl of hot water can help release respiratory congestion and open up the sinuses. Using this method 3-5 times per day is a wonderful way to shorten a cold. Avoid steaming with Peppermint.

Using an inhaler (where the inside pad is soaked with essential oils) is another alternative. Inhalers provide less of a dose than steam inhalation, and can be an easier method to use.

A more gentle alternative to steam inhalation and using an inhaler is diffusion. Diffusing essential oils provides a gentle, ambient absorption, and is a wonderful alternative to steam inhalation for children. A few drops of essential oils is added to a water chamber and diffused into the room. This method is not as effective on colds, but can be a safe alternative for young children, as dosage is much less. Diffusing essential oils can also be used to cleanse the air of germs, help improve moods, or simply provide a pleasant aroma.

Ingesting Essential Oils

Although modern multi-level marketing companies are casual about the internal use of essential oils, it is wise to carefully consider all the factors involved before using essential oils internally. There are few instances when ingestion of essential oils is preferred over other methods. Seeking guidance from a certified aromatherapist is recommended.

It is important to keep in mind that internal use has risks. Because the mucous membrane is thinner, it allows for a more rapid ingestion of essential oils. Any safety concerns associated with the essential oil become more of a concern when ingested, as "up to 95% reaches the bloodstream when used internally" than the "potential 10% when used topically." (2)

Physical contact of essential oils on the mucous membranes can cause immediate irritation, or even burns. Long-term consequences of allowing essential oils to physically touch this delicate skin can lead to permanent damage, including scarring and ulcers, as well as liver and/or kidney damage, as well as the potential for cancer.

If you do ingest essential oils, even for a short amount of time, please add the drop of essential oil to another oil/fat (coconut oil, olive oil, or even butter), so the concentration is diluted once it comes in contact with your mucous membranes. Adding essential oils to water, for example, is not recommended, as water and oil do not mix, and the essential oil will contact the mucous membranes in a concentrated state. A step up would be to put the essential oil/fat mixture in a capsule and swallow, bypassing all contact with the mucous membranes, and lessening chances of gastric irritation.

Always keep in mind that although ingesting can be more effective in certain instances, inhalation and topical use are the two safest ways to use essential oils.

A Word on Sensitization

Although sensitization is an issue which complexity is beyond the scope of this report, it deserves mention due to the topic matter. Sensitization is as common an issue as irritation and toxicity and more and more people will have a sensitization issue due to the current over-use of using essential oils undiluted.

Not many people are aware of the risks for sensitization, sometimes called contact allergic reaction. Sensitization is described as “a delayed-sensitivity reaction which manifests often as severe irritation which involves the immune system...Sensitized lymphocytes are then cloned and localize producing an inflammatory reaction. Further contact of the same compound or a chemically related substance with the skin or any other part of the body can cause irritation as described above. ” (3)

People with sensitive skin, dermatitis, or eczema are especially prone to sensitization. Although there are essential oils known to be sensitizers, such as Aniseed, Cassia, Peru Balsam, and Spearmint, there are even more which are suspect. It is important to keep in mind that anyone could become sensitized to any essential oil at any time, and not just on the first use. For this reason, it is not recommended that you use essential oils undiluted, and that you not use the same essential oil every day for a long period of time. If you are dealing with a long-term issue, it's best to rotate different essential oils every 10 days or so to minimize the chances of becoming sensitized to the essential oils.

Essential Oil Safety During Pregnancy

If you are pregnant, nursing, or using the essential oils on or around young children, it is especially important to be sure the oils you are using are safe for you to use. Although there is not much information out there on exactly if and how much of the essential oil constituents cross the placenta, it's safe to assume it does cross the placenta and can affect the growing baby.

Here are some general guidelines for essential oil use during pregnancy:

- daily use of any essential oils are not recommended – limiting use to relieving nausea or insomnia is preferred
- topical use should be limited to a 1% dilution - using oils "neat." or undiluted is never recommended
- steam inhalation should be used with caution – diffusion is preferred
- internal use is never advised
- avoid the use of any absolutes or solvent-extracted essential oils (avoiding synthetic fragrance oils goes without saying)

The following essential oils are not recommended for use during pregnancy (4):

- Camphor *Cinnamomum camphora* due to the constituent camphor*
- French Lavender *Lavandula stoechasb* due to the constituent fenchone
- Spike Lavender Lavandula latifolia due to the constituent camphor*
- Hyssop *Hyssopus officinalis* due to the constituent pinocamphone
- Nutmeg *Mysristica fragrans* due to the constituent myristicin
- Sage *Salvia officinalis* due to the constituent thujone
- Spanish Sage *Salvia lavandulaefolia* due to the constituent sabinyl acetate**
- Wintergreen *Gaultheria procumbens* due to the constituent methyl salicylate***
- Yarrow *Achillea millefolium* due to various constituents
- Indian Dill Seed *Anethus sowa* due to the constituent apiole****
- Parsley Leaf or Seed Petroslinum sativum due to the constituent apiole****
- Pennyroyal *Mentha pulegium* due to the constituent pulegone metaboli*****
- Rosemary *Rosmarinus officinalis* due to the constituent camphor*
- Rue *Ruta graveolens* due to short-chain ketones

*camphor is known to cross the placenta and become very toxic to the growing baby. Avoid all internal and topical use during pregnancy. In addition to the above essential oils, camphor is also found in Armoise, Balsamit, Ho Leaf, Lanyana, Lavender Stoches, and Sage (Dalmation).
**sabinyl acetate causes abortions and/or deformities in fetuses. Avoid all internal and external use during pregnancy. In addition to those marked above, sabinyl acetate is found in Savin (*Juniperus sabina*) and Juniper (*Juniperus pfitzeriana).* NOTE: Juniper Berry (*Juniperus communis*) does not contain sabinyl acetate and is safe for use during pregnancy.
***methyl salicylate causes deformities in developing mammals at high oral doses. Avoid all internal use and limit external use during pregnancy. In addition to Wintergreen, methyl salicylate is also found in Birch and Cassia.
****apiole is an abortifacient, and not recommended for internal or external use during pregnancy. In addition to those marked above, apiole is found in Dill and Parsley essential oils.
*****pulegone metaboli can cause liver toxicity for the mother, and is not recommended for internal use; limit external use. In addition to Pennyroyal, this constituent is also found in Peppermint, Spearmint, Buchu, Cornmint, and Calamint.

Safrole is another constituent which is of concern to pregnant women and their babies, as kidney and liver tumors can develop in the baby. It is recommended that all internal use should be avoided, and external use limited. Essential oils containing safrol are: Camphor, Cinnamon Bark, Cinnamon Leaf, Ho Leaf, Mace, Nutmeg, Sassafras, and Star Anise. Actual safrole content varies, so please check the GC/MS reports for exact percentages in the oils you will be using.

Menthol-Containing Essential Oils and Children

Essential oils should be used with caution around children. Essential oils high in menthol and/or 1,8-cinole – Eucalyptus and Peppermint, for example – should be used with care around children aged six and under. The cooling sensation these oils provide can slow respiration, or even stop it. These oils should never be used on or around the face, although rubbing them into the bottoms of the feet is considered safe.

Not all children will have a negative reaction when inhaling Eucalyptus or Peppermint, but since results vary from child to child, the warning must be given.

Always treat essential oils as you would any other powerful medicine and keep them out of the reach of children.

In Conclusion

Essential oils are very concentrated substances and are not without risk regardless of quality. Example: when used internally, Eucalyptus is deadly even in small amounts, as is Wintergreen.

Properly diluting essential oils provides a measure of safety against topical irritation, sensitivity, photosensitivity, and sensitization.

Carrier oils can enhance therapeutic action of essential oils, yet have a limited shelf life. Don't pre-mix large batches where the carrier oil will go bad before you use it up.

Topical application is not ideal for every situation. Inhalation is under-rated and very effective.

Pregnant women need to be especially careful when using essential oils, as some oils are never okay to use during pregnancy.

Children are especially vulnerable to the strength of essential oils and much care should be given as consequences can be harsh. Treat essential oils like you would any other powerful medicine and **keep them out of the reach of children**.

Casual, daily, "preventative" use of internal oils, although popular, is over-rated and not recommended, as you are putting yourself at greater risk for negative reactions the more you consume. Burns, scars, ulcers, liver failure, and cancer, are some of the effects of long-term internal use.

Ingestion of essential oils has its place, but must be approached cautiously and under the guidance of a trained aromatherapist. Essential oil company reps are trained in sales, not aromatherapy.

Never add essential oils to water. If you need to use essential oils internally, add 1 drop of approved essential oil along with some fat or other oil, and put in a capsule. This prevents mucous membrane damage that can occur when undiluted oils, floating on the top of your water, hit your insides.

Essential oils bearing the names of familiar herbs can appear deceptively safe. In reality, these are some of the most dangerous essential oils you can use.

"Therapeutic grade" is a marketing term which has no actual certification value. The fact is all essential oils are, by definition, "therapeutic."

Internal use is safe based on the oil itself, not the "quality" of the brand. It is not prudent to make a blanket statement of "X companies oils are all safe for internal use." Actually, internal use safety is contingent on the essential oil. You have have an excellent-quality Eucalyptus, which can kill you if too much is consumed. You could say high quality = more potency = more risk for negative effects. Lower potency = less risk for negative effects.

Including the words "supplement facts" or "nutritional data" is not a clue they are safe to consume. Again, it's all about the essential oil.

Labels indicating "certification" are certified by their own company only, and not a governing body outside of the company. Anyone can certify their own products.

Since everything we apply to our skin has the potential to be absorbed, we want to be sure we have a quality essential oil free of pesticides, contaminants, synthetic constituents, or other adulterations. **There are many essential oil companies which provide quality oils** – not just 2%.

There is no one, single, company that has the market cornered on quality. Many companies provide high quality essential oils. These are indicated by the education and information they provide on their website, along with their products. They want you to learn how to use them safely. Clues they care about safe use of essential oils are: clearly noting the Latin name, chemotype (if applicable), country of origin, plant part used, and method of extraction. **Reputable companies know the importance of providing this information**. Latin name will indicate species – some of which are to be avoided if you are pregnant, and some simply have different therapeutic properties. Same with chemotype – different therapeutic properties are indicated. Country of origin can also indicate quality. Plant part used is important, as some are better than others (Cinnamon Bark and Cinnamon Leaf have different safety precautions). Method of extraction is important, as cold-pressed Lemon is phototoxic, where steam distilled Lemon is not.

Remember, there are limited distillers, yet hundreds of websites selling essential oils. **Most of them are coming from the same places and they will virtually all be effective**. Companies that care about quality will run their own GC/MS tests, rejecting batches that are shown to be poor quality. They will continue to purchase from quality sources, not going by lowest price, which will be indicated in a more expensive end product.

For more information visit http://www.LearningAboutEOs.com

Citations:

1. Robert Tisserand, RobertTisserand.com, (2007), Challenges Facing Essential Oil Therapy: Proof of Safety. http://roberttisserand.com/articles/ChallengesFacingEssentialOilTherapyProofofSafety.pdf
2. Robert Tisserand (2013) Facebook Page https://www.facebook.com/RobertTisserandEssentialTraining
3. Sylla Shepherd-Hanger, AtlanticInstitute.com
4. Andrea Butje, Aromahead.com