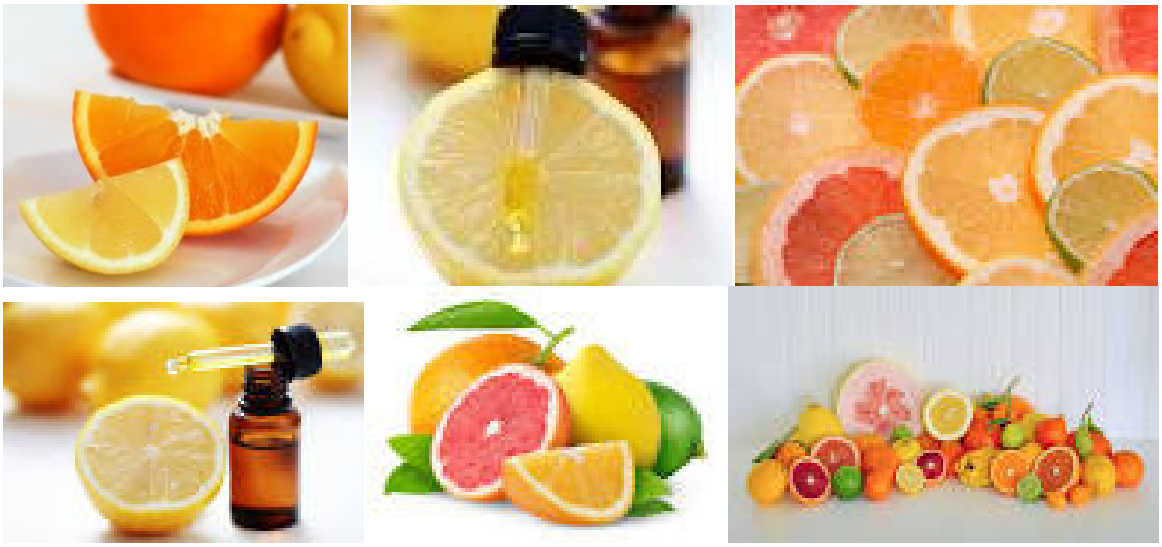

CITRUS SOLVENTS

There is a growing number of citrus-based solvents on the market. The key ingredient, **D-Limonene**, also known as orange oil, the solvent extracted from orange peel is more powerful than mineral spirits. Solvents can be made from natural sources such as turpentine and the citrus solvents (d-limonene), but most are derived from petroleum or other synthetic sources.

HOW DO SOLVENTS AFFECT US?

There are no “safe” solvents. All solvents, natural or synthetic, are toxic.
In general, solvents can irritate and damage the skin, eyes, and respiratory tract, cause a narcotic effect on the nervous system, and damage internal organs such as the liver and kidneys.
These kinds of damage can be acute (from single heavy exposures) or chronic (from repeated low dose exposures over months or years).

SKIN CONTACT

Natural solvents such as turpentine and limonene are known to cause skin allergies.

THE EYES AND RESPIRATORY TRACT

All solvent vapours can irritate and damage the sensitive membranes of the eyes, nose, and throat. Inhaled deeply, solvent vapours also can damage lungs.
Liquid solvents splashed in the eyes can cause eye damage.

THE NERVOUS SYSTEM

All solvents can affect the brain or central nervous system (CNS) causing “narcosis.” Immediate symptoms of CNS effects may include dizziness, irritability, headaches, fatigue, and nausea.
Years of chronic exposure to solvents can cause permanent CNS damage resulting in memory loss, apathy, depression, insomnia, and other psychological problems which are hard to distinguish from problems caused by everyday living.

EXPLOSION AND FIRE HAZARDS

Two properties which affect a solvent's capacity to cause fires and explosions are evaporation rate and flashpoint.
In general, the higher a solvent's evaporation rate - the faster it evaporates and the more readily it can create explosive or flammable air/vapor mixtures.

All, solvents, flammable or not, should be isolated from sources of heat, sparks, flame, and static electricity.

RULES FOR CHOOSING SAFER SOLVENTS

1.
Compare Threshold Limit Values. Choose solvents with high threshold limit values whenever possible.
2.
Compare evaporation rates. Choose solvents with low evaporations rates whenever possible.
3.
Compare flash points. Choose solvents with high flashpoints whenever possible.
4.
Compare toxic effects. Although all solvents are toxic, some may be especially dangerous to you.
For example, if you have heart problems, it makes sense to avoid solvents known for their toxic effects on the heart.
5.
Compare within classes. Often solvents in the same chemical class can be substituted for each other and chemicals in the same class usually dissolve the same materials and work similarly.

RULES FOR SOLVENT USE

I.
Try to find replacements for solvent-containing products. New and improved water-based products are being developed. Keep abreast of developments in new materials.
2.
Use the least toxic solvent possible. Consult Material Safety Data Sheets on the products you use and choose those containing the least toxic solvents.
3.
Insist on compliance with OSHA hazard communication laws at your workplace.
This law requires: a complete inventory of all solvents and solvent-containing products; complete labelling all containers, even ones into which solvent products have been transferred;
A file of Material Safety Data Sheets on all solvents kept where it is available during all working hours; and
Formal training of all potentially exposed persons.
4.
Avoid breathing vapours.
Use solvents in areas where local exhaust ventilation is available.
Dilution ventilation should only be used when very small amounts of solvents or solvent-containing products are used.
Use self-closing waste cans for solvent-soaked rags.

Keep containers closed when not in use.
Design work practices to reduce solvent evaporation.
Keep a respirator with organic cartridges or an emergency air-supplying respirator at hand in case of spills or ventilation failure.
5.
Avoid skin contact. Wear gloves for heavy solvent exposure and use barrier creams for incidental light exposures.
6.
Protect eyes from solvents. Wear chemical splash goggles that meet ANZ standards.
Install an eye wash fountain.
7.
Protect against fire, explosion, and decomposition hazards.
Follow all local and federal codes for use, handling, ventilation, and storage.
Store amounts larger than a 5L in approved flammable storage cabinets
8.
Be prepared for spills.
If spills of large amounts are likely, use chemical solvent absorbers sold by most major chemical supply houses.
Special traps to keep solvent spills out of sewers may be required by law.
Release of large amounts of liquid or vapour of certain solvents must be reported to EPA (Environmental Protection Authority).
9.
Use and dispose of solvents in accordance with local or federal regulations.
These vary around the country depending on the type of sewage treatment systems, air quality problems and other factors that determine how solvents may be used and discarded.
You may need to call a local department of environmental protection, publicly-owned water treatment facility or other governmental agency to find out the rules in your area.

SAFETY NOTE:

NEVER INHALE CONCENTRATED VOC's !

Concentrated VOCs when directly inhaled (including plant derived VOCs such as orange oil) may cause lung damage or even death by asphyxiation

Although some solvents are less hazardous than others, all solvents can cause toxic effects. There are no safe organic solvents, only more and less toxic ones. All organic solvents can affect the nervous system, respiratory system, skin, eyes, and internal organs to some degree. Solvents are also implicated in damage to both the male and the female reproductive systems."

Source: UIC Health and Safety in the Arts Library

Unlike Citrus, Pavertrend™ is.....

Non-Hazardous – most citrus products do not meet EPA regulations.
Less Expensive – the leading citrus products cost about twice as much on average as Pavertrend™
More effective - Pavertrend™ stays on longer so it can be reapplied less.
Non-Flammable – The flashpoint for Pavertrend™ is much higher than most citrus products.