

# Pining for the holidays

Making the holidays 'greener' still takes trees.

**W**ith the holiday season upon us, many people are shopping for a pine tree or wreath to decorate their homes. Certainly the downside of using living trees or branches over artificial plastic decorations is dealing with the needles, but many think the wonderful aroma they give off is worth it. Some choose an apparently environmentally friendly option and switch to an artificial tree but then use a product that imparts that characteristic odor. Most of these odorants are made with pine oil.

Pine oil is a derivative of turpentine, which is manufactured by distilling the aromatic resin from the *Pinus* species of trees. Other species of trees, like *Boswellia* and *Commiphora*, produce the aromatic resins frankincense and myrrh, respectively.

Pine resin is a viscous hydrocarbon secretion composed mainly of volatile terpenes or heptanes. On its own, the resin can be used in incense, nail polish, varnish, adhesive and food-glazing agents. Resin may undergo distillation to extract its volatile terpene components; the first fraction is principally turpentine.

Turpentine was first used medicinally in ancient Greece where it came from local terebinth trees, thus deriving its name *terebinthine*. Most modern turpentine is obtained from pine sources and used as a solvent for paints and varnishes or in cleaning products for its antiseptic properties and clean odor.

Turpentine achieved some notoriety when Soichiro Honda built his first motorcycles. During Post-World War II, Japan had desperately overcrowded public transportation and a shortage of gasoline, so out of necessity he built a motorcycle that could run on turpentine. Giving off a lot of smoke as well as the odor of turpentine, the original A-type motorcycle was known as The Chimney.

Further fractions from the distillation of pine resin yield pine oil, an essential oil used in aromatherapy, massage oils, bath oils, antiseptics and disinfectants. Pine oil may also be used as a lubricant for clockworks, as an odorant in lubricants with undesirable odors or as a bactericide in cutting oils. Copper mines employ pine oil during the extraction process where it absorbs copper sulfide from the froth floatation.

The heaviest fraction from pine resin distillation is known in

its solid form as rosin. Rosin can be used as the precursor to the flux for soldering, for creating a polishing surface for optical glass or on the bows used to play stringed instruments. Powdered rosin is used by ballet dancers, gymnasts, boxers, bull riders, baseball pitchers and bowlers to help improve their grip. It's even used similarly at the starting line of drag races.

Amber, which is fossilized resin, is also used in perfumes due to its aromatic properties. While amber may be famously remembered from the *Jurassic Park* movies, where it held the mosquito that contained dinosaur DNA, it was incorrectly referred to as fossilized sap. Sap, also sticky and exuded by trees, is not resin.

Resin itself is not obtained from the lumber or pulp-viable parts of the pine tree but from the needles, branches and stumps. Utilizing what would otherwise be waste products as a resource does not really qualify pine oil as a green product since substantial energy must be inputted during distillation. Once packaging and distribution are factored in, the carbon footprint for the pine fragrance spray itself becomes rather substantial.

So what is the most environmentally friendly option for a holiday tree? Con-

trasting the resources required to produce long-lasting artificial trees made from metal and plastic against those to farm living trees each year is difficult. At the end of their useful lives, arguments favor living trees since they are often collected for composting or recycling, whereas artificial trees are usually discarded. Certainly adding fragrance to an artificial tree does not help in the discussion since the very same trees may be involved.

Whether the pine scent you smell is natural or manufactured, there are a number of factors that affect the "greenness" of holiday décor. I'll leave it to you to decide which is the best choice.

Wishing you and yours a Happy Holiday and all the best in the New Year.



**Arguments favor living Christmas trees since they are often collected for composting or recycling.**



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