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Morris Signorelli
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Dear Morris:

As per our conversation I'm attaching the complete file on TRAFICRON, including the environmental impact assessment of traficron versus powder coating in relation to CO2 emission in comparison to VOC's.

CO2 emission has been calculated on the basis of energy consumption by a 30ft by 8ft by 5ft oven with 1.6 million BTU burner and it's average output capability. The calculation will suggest that the powder method will contribute approximately 13kg of CO2 per pole in comparison to 0.8kg using traficron (from VOC's breakdown). As you can see there is a 16 to 1 ratio, if primer is used the ratio will drop to 8:1.

It is true that it is difficult to compare these two pollutants, one being local (VOC) the other being global (CO2). Eventually all VOC's will break down to CO2. The question then is limited to temporary toxicity of VOC versus the chemical compounds and elements generated in the combustion of natural gas, that in fact CO2 is not the only by product. NOx, SOx, HCs, CO plus another 15 to 20 chemicals are present (please refer to table 19 and 20 provided by BC Gas), which some are reporting substances if discharge exceed as little as 5kg per day (62.5 GJ). The definition of VOC differs from jurisdiction to jurisdiction. In the United States, the criterion for VOC regulation used by the EPA is "atmospheric lifetime" (greater than 60 days). The US uses atmospheric lifetime because using vapour pressure alone only shows how quickly the chemical evaporates, and does not take into consideration the speed at which the chemical breaks down in the atmosphere. For example, it is a chemicals atmospheric lifetime, or the combination of its rate of evaporation and rate of decomposition, that determines its ability to form ozone in the troposphere. An organic solvent that lasts more than 60 days before breaking down has already moved out of the troposphere, so it cannot contribute to tropospheric ozone formation or smog.

The EEC's (Europe's) definition of volatile organic compounds is "any organic compound having at 293, 15 K a vapour pressure of 0.01 kPa or more." There

are two major problems with using vapour pressure alone as a criterion to regulate tropospheric ozone contribution. First, it arbitrarily captures many compounds that in fact do not contribute to ozone formation in the lower atmosphere. Second, using the vapour pressure criterion misses many VOCs that do contribute to tropospheric ozone formation, like the straight chain hydrocarbons. The decision to use vapour pressure criterion was made in Europe many years ago, but I've been unable to find its scientific basis.

The US EPA has determined atmospheric lifetimes for organic solvents. Drying studies are used to predict the time for a compound to evaporate and enter the troposphere. This is combined with atmospheric reaction times from a smog chamber to show the loading caused by a particular substance, and its contribution to smog production. The EPA gives VOC exemptions to products with atmospheric lifetimes greater than 60 days.

Model Comparing Life of some Straight Chain Hydrocarbons

	Dodecane	Hexadecane	Octane	Decane
Vap Press kPa	0.009	0.00005	1.39	0.12
Vap Press mmHg	0.07	0.0004	10.44	0.91
Evap Time	4733	852,000	30	355
Tropospheric Lifetime Days	1.0	0.6	1.7	1.2
Atmospheric Lifetime Total Days	4.3	592.0	1.7	1.4

Note that dodecane a C-12 paraffin meets the definition of having a vapour pressure less than 0.01 kPa. It evaporates very slowly, but reacts rapidly in the atmosphere. It would not be surprising if some major firms prefer regulation based solely on vapour pressure, because this will allow some products that contribute to ozone formation in the troposphere to avoid regulation.

Atmospheric lifetime is used as the general criterion for setting standards for ozone contribution in the lower atmosphere. This is the exact same approach that was used to determine ozone depletion in the upper atmosphere (Montreal Protocol), so all countries already have plenty of experience with it. To prevent ozone depletion the atmospheric lifetime of a chemical must be less than 365 days, while to prevent ozone contribution a chemical's atmospheric lifetime must be more than 60 days.

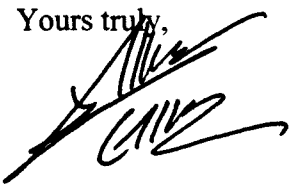
As you can see the issues are quite complex. The only avenue available to us is the local regulation and guidelines created by governments and environmental groups. Traficron is in compliance with California air quality standards, known as one of the toughest in North America, and CO2 is becoming a major issue (Kyoto Protocol). I discussed the problem with a GVRD air standards officer and in his opinion the goal is to reduce total emission what ever they are (not reduce one on the cost of others), with an California standard). It should be also mentioned that the expectancy of [illegible] 20 years plus, powder 3 to 5 years. After 8 years in service the powder will no longer looks aesthetically pleasing due to chalk, colour loss, mildew growth due to the highly porous surface. There are several areas in Richmond where powder coated poles were repainted only after 5 to 7 years in service. So consequently if using a Fluoropolymer Topcoat could save just one recoat in total life expectancy of the pole the VOC and CO2 comparison would be irrelevant.

All CO2 generated in powder processes are in excess and unnecessary with no benefit of VOC reduction at all.

The letter from Nelson Environmental Inc. shall put to rest any concerns from the municipality of West Vancouver with respect to the "dogs" problem. The 51PC100 is the basic resin of traficron and by adding anti-graffiti additives will enhance the performance even further. The page from UBC specification to repaint monumental building clearly requesting fluoropolymer topcoat with no substitution after conducting intensive research by Omicron Consulting Group and UBC is more confirmation of the high quality of the above mentioned product.

At this time I would like to thank you for taking time to review the proposed system and please do not hesitate to call me anytime if I may of any further assistance in approving proposed specifications.

Yours truly,



Greg Palamarz Eng(R&D)