



**Primex Industrial Coatings
#140 - 12051 Horseshoe Way
Richmond, BC
V7A 4V4**

21 November 2002

Attention: Gregory Palamarz

Regarding: An Environmental Comparison of Two Painting Methods

Dear Mr. Palamarz,

As per our conversation, A.C.M. Environmental compared two painting methods used to paint hydro poles. The one method consisted of using a solvent-based paint, and the other used a powder that was baked on to the hydro pole.

After reviewing both systems it was determined that one way to compare them was to compare the total CO₂ that would be produced by both methods. The baking method directly produces CO₂ through the burning of natural gas (CH₄). This reaction produces CO₂ and H₂O assuming 100% complete combustion. Should incomplete combustion occur, other compounds such as, dioxins, CO, particulates, etc. may be created.

The solvent method was also examined. After reviewing the MSDS, the three components entailing approximately 90% of the mass were examined. One of the three components, titanium dioxide, consisting of 0-20% was dismissed, as it would not decay into CO₂. The two remaining compounds were Methyl N-Amyl Ketone (cas 110-43-0), and Monoethyl Ether Acetate (cas 106-74-1).

Our discussion determined that the non-solvent based method uses on average 4.025 GJ / day of energy for 15 poles. The energy consumption of CH₄ equates to approximately 50 Kg CO₂ / GJ. Therefore, 201.3 Kg of CO₂ are produced.

Also, it was determined that the solvent method uses 169 g of solvent per hydro pole. The heat method can paint 15 poles in one day; therefore the solvent method must use 2532 g of solvent for an equal comparison.

The solvent-based method was compared to the heat method by conducting a simple carbon balance around these two compounds. The carbon balance indicated that 4.84 g CO₂ are created per g of solvent. Therefore, 12.255 Kg of CO₂ are produced. The carbon balance around the solvents assumes that they are all degraded into CO₂ and

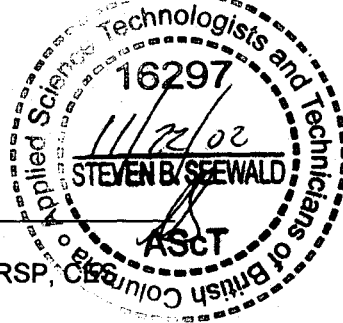
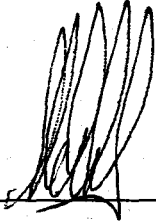
H₂O. This reaction may take a very long time as the solvent may be taken up by organic entities. At that time the solvents may be metabolized into other compounds at an unknown rate. It should be noted that VOCs first degrade to become ground level ozone, creating smog.

The methods used here are just one way of comparing the two methods for painting hydro poles. CO₂ was chosen as it is known as a "green house" gas, and this project was only concerned with environmental concerns.

If you have any questions or require further information on the above, please do not hesitate to contact us at your convenience. Thank you for having A.C.M. carry out this work for you.

Yours Sincerely,

A.C.M. ENVIRONMENTAL CORPORATION



Steven Seewald, ASCT, CRSP, CMAA

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