A ENVIRONMENTAL
C CORPORATION
M

**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 $CO_2$ that would be produced by both methods. The baking method directly produces $CO_2$ through the burning of natural gas ($CH_4$). This reaction produces $CO_2$ and $H_2O$ 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 $CO_2$. 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 $CH_4$ equates to approximately 50 Kg $CO_2$ / GJ. Therefore, 201.3 Kg of $CO_2$ 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 $CO_2$ are created per g of solvent. Therefore, 12.255 Kg of $CO_2$ are produced. The carbon balance around the solvents assumes that they are all degraded into $CO_2$ and



**Suite 211 - 2323 Quebec St., Vancouver, BC, Canada V5T 4S7**
**Tel: (604) 873-8599 Fax: (604) 873-5956 Email: admin@acmenvironmental.com**

$H_2O$. 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. $CO_2$ 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**

Applied Sciences Technologists and Technicians of British Columbia
16297
11/22/02
STEVEN B. SEEWALD
ASCT

Steven Seewald, AScT, CRSP, CESS

SS/ss
1974R0101