PLASTIC WASTE-TO-FUEL/ENERGY TECHNOLOGIES

• ANIMAL, MINERAL OR VEGETABLE – WHAT DO YOU CALL THIS???

• OR

• FINDING THE RIGHT BOX.
REVIEW OF P2F TECHNOLOGY

• PLAN IS TO INSTALL 16 PROCESSING UNITS
• FEEDSTOCK: 33,000,000 LBS/YEAR OF MIXED PLASTIC
• RECLAMATION GOAL: 3,640,000 GALLONS OF SYNTHETIC CRUDE OIL (87,000 BARRELS) PER YEAR
• WASTE GENERATED:
  – 3,036,000 LBS/YEAR OF CHAR
REGULATORY/PERMITTING ISSUES

• AIR QUALITY PERMIT
  – REGULATED BY CLEAN AIR ACT
  – DELEGATED TO THE STATE OF OREGON
  – EMISSION SOURCES
    • FUEL TO HEAT UNITS – PROPANE OR NATURAL GAS
    • PARTICULATE MATERIAL FROM MATERIAL GRINDING
    • NON-DESTRUCTIBLE GASES
    • DISPLACEMENT GASES FROM STORAGE TANKS
SIMPLE ACDP CRITERIA

- Preliminary Emissions Data - Criteria Pollutants

Pollutant Process Burner and plastic dust

- tons/yr Oxidizer  tons/yr Total  tons/yr
- PM  0.13082  0.76176  0.89258
- PM$_{10}$  0.13082  0.76176  0.89258
- SO$_2$  0.06028  0.33120  0.39148
- NO$_x$  2.31840  0.76308  3.08148
- CO  1.94746  0.33915  2.28660
- VOC (THC)  0.12751  0.16957  0.29709

- Number, PRU Units  Operational Days per year  Burner Output (BTU/hr)
  - 16  345  350,000
SOLUTION OR PROBLEM?
SOLID WASTE ISSUES

• PERMITTED IN OREGON AS A SOLID WASTE TREATMENT FACILITY BECAUSE OF PYROLYSIS.

• WE HAVE CONTENDED THAT WE ARE RECYCLING AND THEREFORE EXEMPT FROM SOLID WASTE PERMITTING:

  – “Recycling” means any process by which solid waste materials are transformed into new products in a manner that the original products may lose their identity. ORS459.005(20)
SOLID WASTE ISSUES

• PER OREGON ATTORNEY GENERAL (1994)
  “PYROLYSIS OF PLASTICS IS NOT RECYCLING TO THE EXTENT THE END PRODUCT OF THAT PROCESS IS A FORM OF ENERGY.”

• ORS 459.005“‘ENERGY RECOVERY’ MEANS RECOVERY IN WHICH ALL OR A PART OF THE SOLID WASTE MATERIALS ARE PROCESSED TO US THE HEAT CONTENT, OR OTHER FORMS OF ENERGY, OF OR FROM THE MATERIAL.”
OTHER SOLID WASTE ISSUES

• REDUCE, REUSE, RECYCLE, COMPOST, ENERGY HIERARCHY
• GREEN HOUSE GAS CONSIDERATION
• LACK OF FUNDING FOR SOLID WASTE TO ENERGY
WATER QUALITY PERMITTING

• NPDES PERMIT FOR SURFACE WATER DISCHARGE ONLY BECAUSE OF OUTSIDE STORAGE OF PLASTIC FEEDSTOCK.
• WATER IN THE PLASTIC CONDENSER UNIT WILL NEED TO BE FILTERED AND REUSED.
• FILTRATION THROUGH AN ION EXCHANGE CARTRIDGE. CARTRIDGE HANDLED BY A RCRA AUTHORIZED DISPOSAL COMPANY. (LIKE A TONER CARTRIDGE)
HAZARDOUS WASTE ISSUES

• SOME CADMIUM AND LEAD HAS SHOWN UP IN CHAR. (ABOUT 2 OUT OF 20 BATCHES)
• BATCHES THAT EXCEED RCRA METAL STANDARDS WILL NEED TO BE DISPOSED OF AS HAZARDOUS MATERIALS THROUGH A LICENSED HAZ WASTE DISPOSAL PROVIDER
• OR BENEFICIA NALLY USED IN AN APPROVED END-PRODUCT.
• NO HAZ WASTE PERMIT IS NEEDED JUST $$$
OTHER PERMITTING ISSUES

• PILOT TO PRODUCTION
• WASTE STREAM RESTRICTIONS
• HOW LONG DOES THE PERMITTING PROCESS TAKE?
END USE OPTIONS:
   OIL
   CHAR

SYNTHETIC CRUDE OIL:

REFINED PETROLEUM PRODUCTS
MANUFACTURERS OF VIRGIN PLASTIC
DIESEL FUEL
BUNKER FUEL

CHAR:

BRIQUETS FOR FUEL
CARBON BLACK INK ADDITIVE
ECONOMIC FACTORS

SIZING A SYSTEM FOR INVESTMENT/RETURN NEEDS

WASTE STREAM MARKET VOLUMES AND COLLECTION COSTS

– AGRICULTURAL PLASTIC
– INDUSTRIAL MATERIALS
– OIL/LUBRICANT CONTAINERS
OPERATIONAL COSTS AND OPPORTUNITIES

• COST TO PRODUCE OIL
• JOB CREATION
• MAINTENANCE AND DOWNTIME
• GROWTH OPPORTUNITIES
FUNDING

- NOT RENEWAL ENERGY
- NOT PUBLIC WORKS PROJECT
- ENERGY TAX CREDIT PROGRAM UNDER FIRE
- NOT RECYCLING
- NOT READY
- NOT IN ANYBODY’S BOX UNTIL

- HB 3592 THE PLASTICS RECYCLING ACT OF 2009
- INTRODUCED IN THE HOUSE FALL 2009
- CURRENTLY HAS 20 CO-SPONSORS
- SENATOR RON WYDEN-(D) OREGON STAFF WRITING SENATE VERSION
- NEED SUPPORT
CONTACT INFORMATION

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