



Florida Department of Environmental Regulation

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Lawton Chiles, Governor

Carol M. Browner, Secretary

FAX TRANSMITTAL LETTER

DATE: July 15, 1991

TO:

NAME: Ewart Anderson
AGENCY: DERM

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OF PAGES (INCLUDE COVER SHEET): 3

FROM:

NAME: Willard Hanks
AGENCY: DER, BAR

IF ANY PAGES ARE NOT CLEARLY RECEIVED, PLEASE CALL IMMEDIATELY. PHONE NO: 904/488-1344

SENDER'S NAME: Willard Hanks

COMMENTS: Quick calculation shows no problem with metal impact from Riniker. Note Specific Condition no 20 of proposed permit doesn't allow impact to exceed acceptable ambient concentration. Specific Condition no. 21 requires an emission test for metals which will let us check our assumptions. I will address Pat Wong's June 27 letter in the final determination based on the attached calculat.

Rinker - Impact of metal emissions at maximum allowable content

Maximum PM emission = 3.3 lbs/hr \sim 0.74 grams/sec

(Average PM emission = 1 lb/hr \sim 0.129 g/s)

Max 1 hr impact of 1 g/s emission = 6.2 $\mu\text{g}/\text{m}^2$ (from model)

Max 8 hr impact = (1 hr impact) \times 0.7

Max 24 hr impact = (") \times 0.4

Max Annual impact = (") \times 0.1

| Metal | Max PPM in soil | Max. metal emission, g/s | Maximum AAQ impact ($\mu\text{g}/\text{m}^2$) | | | | No. Threat level ($\mu\text{g}/\text{m}^2$) | | |
|----------|-----------------|--------------------------|---|----------------------|----------------------|----------------------|---|----------------------|----------------------|
| | | | 1 hr | 8 hr | 24 hr | Annual | 8 hr | 24 hr | Annual |
| arsenic | 55 | 2.3×10^{-5} | 1.4×10^{-4} | 1×10^{-4} | 5.7×10^{-5} | 1.4×10^{-5} | 2 | 0.48 | 2.3×10^{-4} |
| chromium | 2750 | 1.2×10^{-3} | 7.4×10^{-3} | 5.2×10^{-3} | 3.0×10^{-2} | 7.4×10^{-4} | 5 | 1.2 | 50 |
| lead | 55 | 2.3×10^{-5} | 1.4×10^{-4} | 1×10^{-4} | 5.7×10^{-5} | 1.4×10^{-5} | 0.5 | 0.12 | 5.6×10^{-4} |
| mercury | 275 | 1.2×10^{-4} | 7.4×10^{-4} | 5.2×10^{-4} | 3.0×10^{-4} | 7.4×10^{-5} | 0.5 | 0.12 | 8.2×10^{-5} |
| nickel | 77 | 3.2×10^{-5} | 2×10^{-4} | 1.4×10^{-4} | 7.9×10^{-5} | 2×10^{-5} | 1.5 | 0.36 | 9×10^{-2} |
| vanadium | 17 | 7.1×10^{-6} | 4.4×10^{-5} | 3.1×10^{-5} | 1.8×10^{-5} | 4.4×10^{-6} | 0.5 | 0.12 | 0.3 |
| zinc | 165 | 6.9×10^{-5} | 4.3×10^{-4} | 3×10^{-4} | 1.7×10^{-4} | 4.3×10^{-5} | 2 | 0.48 | |
| barium | 165 | 6.9×10^{-5} | 4.3×10^{-4} | 3×10^{-4} | 1.7×10^{-4} | 4.3×10^{-5} | 0.1 | 2.4×10^{-2} | 3 |

Example

Arsenic emission = 0.42 g/s 55 PPM / $1 \times 10^6 = 2.3 \times 10^{-5}$ g/s of arsenic

1 hr impact arsenic = $(2.3 \times 10^{-5} \text{ g/s}) (6.2 \text{ } \mu\text{g}/\text{m}^2 / \text{g/s}) = 1.4 \times 10^{-4} \text{ } \mu\text{g}/\text{m}^2$

8 hr impact arsenic = $(1.4 \times 10^{-4}) (0.7) = 1.0 \times 10^{-4} \text{ } \mu\text{g}/\text{m}^2$

24 hr " " = (") (0.4) = $5.7 \times 10^{-5} \text{ } \mu\text{g}/\text{m}^2$

Annual " " = (") (0.1) = $1.4 \times 10^{-5} \text{ } \mu\text{g}/\text{m}^2$

Also, up to 0.13 lbs/hr lead emission allowed \sim 0.0164 g/s Pb

AAQ Impact ($\mu\text{g}/\text{m}^2$)

| 1 hr | 8 hr | 24 hr | Annual |
|------|------|-------|--------|
| 0.1 | 0.07 | 0.04 | 0.01 |

*** SCREEN-1.1 MODEL RUN ***
*** DRAFT VERSION XXXXX ***

rinker stone dryer modification

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
 EMISSION RATE (G/S) = 1.000 ✓
 STACK HEIGHT (M) = 24.40 ✓
 STK INSIDE DIAM (M) = 1.40 ✓
 STK EXIT VELOCITY (M/S) = 9.50 (based on flow of 9770 dscfm, 28% H₂O + 800°F)
 STK GAS EXIT TEMP (K) = 700.00 ✓
 AMBIENT AIR TEMP (K) = 293.00 ✓
 RECEPTOR HEIGHT (M) = .00 ✓
 IOPT (1=URB,2=RUR) = 2 ✓
 BUILDING HEIGHT (M) = .00 ✓
 MIN HORIZ BLDG DIM (M) = .00 ✓
 MAX HORIZ BLDG DIM (M) = .00 ✓

BUOY. FLUX = 26.54 M**4/S**3; MOM. FLUX = 18.51 M**4/S**2.

*** FULL METEOROLOGY ***

 *** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

| DIST (M) | CONC (UG/M**3) | STAB | U10M (M/S) | USTK (M/S) | MIX HT (M) | PLUME HT (M) | SIGMA Y (M) | SIGMA Z (M) | DWASH |
|----------|----------------|------|------------|------------|------------|--------------|-------------|-------------|-------|
| 1. | .0000 | 0 | .0 | .0 | .0 | .0 | .0 | .0 | |
| 100. | .5176E-02 | 6 | 1.0 | 1.6 | 5000.0 | 86.9 | 18.3 | 18.0 | NO |
| 200. | .6643 | 3 | 10.0 | 10.9 | 3200.0 | 45.5 | 24.0 | 14.7 | NO |
| 300. | 3.852 | 3 | 10.0 | 10.9 | 3200.0 | 45.5 | 34.7 | 21.1 | NO |
| 400. | 5.854 | 3 | 10.0 | 10.9 | 3200.0 | 45.5 | 45.1 | 27.2 | NO |
| 500. | 6.185 | 3 | 10.0 | 10.9 | 3200.0 | 45.5 | 55.2 | 33.1 | NO |
| 600. | 5.926 | 3 | 8.0 | 8.7 | 2560.0 | 51.9 | 65.2 | 39.2 | NO |
| 700. | 5.987 | 1 | 1.0 | 1.1 | 320.0 | 259.8 | 166.5 | 223.7 | NO |
| 800. | 6.182 | 1 | 1.0 | 1.1 | 320.0 | 259.8 | 184.1 | 290.9 | NO |
| 900. | 5.793 | 1 | 1.0 | 1.1 | 320.0 | 259.8 | 201.7 | 369.3 | NO |
| 1000. | 5.341 | 1 | 1.0 | 1.1 | 320.0 | 259.8 | 219.3 | 458.8 | NO |

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:
 481. 6.199 3 10.0 10.9 3200.0 45.5 53.4 32.0 NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED $8hr\ impact = (6.2 \times 10^{-3})(0.7) = 4.34 \times 10^{-3} \frac{ug}{m^3}$
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED $24\ hr\ impact = 2.48 \times 10^{-3} \frac{ug}{m^3} \frac{hr}{24\ hr}$
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB $annual\ impact = (6.2 \times 10^{-3}) \times (0.1) = 0.62 \times 10^{-3} \frac{ug}{m^3}$

 *** SUMMARY OF SCREEN MODEL RESULTS ***
