SECOR
International Incorporated

28 May 1997

Dr. Ronald R. Bellamy
U.S. Nuclear Regulatory Commission
475 Allendale Rd.
King of Prussia, PA 19406

RE: Former EPEC Polymers Inc. Facility
Industrial Avenue
Fords, Middlesex County, New Jersey
Request to Use Soil Contamination Criteria for Depleted Uranium

Dear Dr. Bellamy:

On behalf of EPEC Polymers Inc. (EPEC), SECOR International Inc. (*SECOR*) has prepared this letter to provide information to the U.S. Nuclear Regulatory Commission (USNRC) supporting EPEC's belief that the soil contamination at the above referenced site is due to depleted uranium. The surface soil sample (ISS-1) used to determine the type of uranium contamination at the site was collected at the southwest corner of Building K-12. The location of ISS-1 has the highest known exposure rate at the site. The following is the calculation used to derive the ratio of the number of atoms of U-235 to the number of atoms of U-235 plus U-238 for soil sample ISS-1:

Specific Activities

U-238 - 0.333 μCi/g of uranium
U-235 - 2.14 μCi/g of uranium
U-234 - 6.15 E+3 μCi/g of uranium

Amount of Uranium per Gram of Sample ISS-1

U-235
(43.9 pCi of U-235) / (g soil)(2.14 E+6 pCi) = 20.5 E-6 g of U-235/g soil

U-238
(2,653 pCi of U-238) / (g soil)(0.333 E+6 pCi) = 7.97 E-3 g of U-238/g soil

U-234
negligible even if in secular equilibrium

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111-A North Gold Drive, Robbinsville, NJ 08691-1603 (609) 259-6424 (609) 259-0520 FAX

Atoms Ratio

Moles of U-235 = (2.05 E-5 g of U-235) / (235 g/mole) = 8.72 E-8 moles

Moles of U-238 = (7.97 E-3 g of U-238) / (238 g/mole) = 3.35 E-5 moles

(Atoms of U-235) / (Atoms of U-235 + U-238) =
(8.72 E-8 moles) / (8.72 E-8 moles + 3.35 E-5 moles) = 0.0026 = 0.26%

The atoms abundance ratio (U-235/Total Uranium) calculated by Oak Ridge for depleted uranium is 0.22%. Since the atoms abundance ratio in ISS-1 is 0.26%, the uranium contamination in ISS-1 can be attributed to depleted uranium.

To confirm the above result and conclusion, a series of 14 samples from the Building K-12 environs were counted and the concentrations of U-235 and U-238 were determined using the gamma spectroscopy system. The activity ratio of U-235-to-U-238 was calculated and the results are provided in Table 1. The U-238 concentration was inferred using the concentration of Pa-234m. The mean activity ratio in these samples is 0.031, with a standard deviation of 0.010; the activity ratio in ISS-1 is 0.017. These ratios are not significantly different, suggesting that the contamination at the site is due to depleted uranium. Therefore, EPEC requests the NRC's approval to use 35 pCi/g as the cleanup criteria at the Fords, New Jersey site.

Please contact myself or Paul Lazaar at (609) 259-6424 regarding our request.

Sincerely,
SECOR International, Inc.

Ravi Gupta

Ravi Gupta
Principal-In-Charge

c: Project File
R. Towe, EPEC
T. Jackson, USNRC
J. Wray, USNRC
P. Lazaar, *SECOR*

Table 1
Gamma Spec Sample Log
Former EPEC Polymers Inc.Facility
Industrial Avenue
Fords, Middlesex County, New Jersey

Concentration (pCi/g)			
Sample ID	U-235	Pa-234m[1]	U-235/Pa-234m
DRM1-20B	(2.3 +/- 0.4) E+0	(9 +/- 2) E+1	0.026
DRM1-21A	(1.0 +/- 0.7) E+1	(5.7 +/- 0.3) E+2	0.018
DRM1-22A	(9.0 +/- 0.6) E+0	(3.9 +/- 0.5) E+2	0.023
DRM1-22B	(5.0 +/- 0.3) E+0	(1.5 +/- 0.2) E+2	0.033
DRM1-24B	(1.00 +/- 0.06) E+1	(3.9 +/- 0.5) E+2	0.025
DRM1-25A	(8.6 +/- 0.5) E+0	(3.3 +/- 0.3) E+2	0.026
DRM1-25B	(4.2 +/- 0.3) E+0	(1.5 +/- 0.3) E+2	0.028
DRM1-26A	(4.7 +/- 0.3) E+0	(2.0 +/- 0.3) E+2	0.024
DRUM2-2A	(3.5 +/- 0.3) E-1	(1.3 +/- 0.6) E+1	0.027
DRUM2-2B	(5.7 +/- 0.5) E-1	(1.3 +/- 0.7) E+1	0.044
DRUM2-3A	(8.1 +/- 0.5) E-1	(2.2 +/- 0.6) E+1	0.037
DRUM2-3B	(1.1 +/- 0.9) E+0	(3.2 +/- 1.1) E+1	0.037
DRUM2-4A	(6.7 +/- 0.5) E-1	(1.9 +/- 0.7) E+1	0.035
3-4	(3.9 +/- 0.4) E-1	(8 +/- 6) E+0	0.049

[1] Pa-234m is the isotope used to infer the U-238 concentration.