IEM
Integrated Environmental Management, Inc.

9040 Executive Park Drive, Suite 205
Knoxville, TN 37923
Phone: (423) 531-9140
Fax: (423) 531-9130

1680 East Gude Drive, Suite 305
Rockville, MD 20850
Phone: (301) 762-0502
Fax: (301) 762-0638

March 31, 1997

Mr. C. Scott Eves
Shieldalloy Metallurgical Corporation
Post Office Box 768
Newfield, New Jersey 08344

Re: General Population Dose Estimates from Atmospheric Emissions

Dear Mr. Eves:

On March 13, 1997, I forwarded to you Integrated Environmental Management, Inc. (**IEM**) Report No. 94005/G-6131, "Radiation Dose Estimates from Atmospheric Emissions from the Newfield Facility". In that report, estimates of "maximally exposed" individual dose, as well as a dose estimate for the resident that is closest to the D-111 emission points were given.

In a March 24, 1997 conference call with Mr. Gary Comfort of the USNRC, we discovered that the dose estimate for the nearest off-site resident was slightly higher than for the maximally-exposed individual. The reason for this discrepancy is as follows. When performing the maximally-exposed individual calculation, the distances used as input *began* at 50 meters from the emission points, while the nearest off-site resident was assumed to be located 26 meters south of the emission points. If the maximally-exposed individual calculations are modified to begin at 20 meters from the emission points, the following dose estimates result:

Population	Scenario	Dose estimate (mrem per year)	Location with respect to emission points	Summary Report
Maximally-exposed individual	Elevated release	6.63e-2	20 m ESE	Attachment 1
Maximally-exposed individual	AAF release at ground level	1.37e-1	100 m ESE	Attachment 2
Nearest Resident	Elevated release	6.19e-2	26 m ESE	Appendix A of 94005/G-6131
Nearest Resident	AAF release at ground level	6.38e-2	26 m ESE	Appendix B of 94005/G-6131

As stated on page 12 of the report, the closest residence to the Newfield plant is over 85 feet (26 meters) south of the property line. Since the property line is approximately 400 feet (122 meters)

from the emissions points, the distance from the emission points to the receptor should be 148 meters, rather than the 26 meters used for the calculations. When 148 meters is used as input to the calculation, the dose estimates for the elevated release scenario and for the scenario wherein the AAF release is modeled as ground level are 4.04e-2 millirem per year (see Attachment 3) and 1.24e-1 millirem per year (see Attachment 4), respectively.

I regret the confusion associated with these calculations, and hope that this letter supplies sufficient clarification. However, it is important to note that the differences between any of the calculations are insignificant, and certainly too low to be measurable. Nonetheless, the radionuclide emissions from the Newfield facility during licensed operations are clearly trivial, and that doses incurred by members of the general population are not distinguishable from background. Please call me at (301) 762-0502 if I can answer any questions or provide you with additional information.

Sincerely,

Carol D. Berger, C.H.P.

File 94005.06

ATTACHMENT 1
CAP88-PC SUMMARY REPORT FOR ELEVATED STACK RELEASE
(MAXIMALLY-EXPOSED INDIVIDUAL)

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Mar 27, 1997 9:29 am

Facility: Shieldalloy Metallurgical Corporation
Address: West Boulevard
Post Office Box 768
City: Newfield
State: NJ Zip: 08344

Effective Dose Equivalent
(mrem/year)

6.63E-02

At This Location: 20 Meters East Southeast

Source Category: Ferrocolumbium Emissions from Stacks
Source Type: Stack
Emission Year: 1996

Comments: Stack Test Results from IER-14058-01

Dataset Name: SMC-1996
Dataset Date: Mar 27, 1997 9:29 am
Wind File: WNDFILES\ILG1058.WND

MAXIMALLY EXPOSED INDIVIDUAL
(RN-222 Working Level Calculations Excluded)

Location Of The Individual: 20 Meters East Southeast
Lifetime Fatal Cancer Risk: 1.45E-06

ORGAN DOSE EQUIVALENT SUMMARY
(RN-222 Working Level Calculations Excluded)

Organ	Dose Equivalent (mrem/y)
GONADS	6.95E-02
BREAST	6.53E-02
R MAR	6.01E-02
LUNGS	5.22E-02
THYROID	6.58E-02
ENDOST	1.67E-01
RMNDR	6.21E-02
EFFEC	6.63E-02

RADIONUCLIDE EMISSIONS DURING THE YEAR 1996

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-238	Y	1.00	1.8E-04	6.8E-05	2.5E-04
TH-234	Y	1.00	1.8E-04	6.8E-05	2.5E-04
PA-234	Y	1.00	1.8E-04	6.8E-05	2.5E-04
U-234	Y	1.00	4.1E-05	1.7E-05	5.8E-05
TH-230	Y	1.00	1.9E-05	6.6E-06	2.5E-05
RA-226	W	1.00	1.9E-05	6.6E-06	2.5E-05
RN-222	*	0.00	1.9E-05	6.6E-06	2.5E-05
PO-218	W	1.00	1.9E-05	6.6E-06	2.5E-05
PB-214	D	1.00	1.9E-05	6.6E-06	2.5E-05
BI-214	W	1.00	1.9E-05	6.6E-06	2.5E-05
PO-214	W	1.00	1.9E-05	6.6E-06	2.5E-05
PB-210	D	1.00	1.9E-05	6.6E-06	2.5E-05
BI-210	W	1.00	1.9E-05	6.6E-06	2.5E-05
PO-210	W	1.00	1.9E-05	6.6E-06	2.5E-05
TH-232	Y	1.00	4.4E-06	2.2E-06	6.6E-06
RA-228	W	1.00	4.4E-06	2.2E-06	6.6E-06
AC-228	Y	1.00	4.4E-06	2.2E-06	6.6E-06
TH-228	Y	1.00	2.3E-06	1.6E-06	3.9E-06
RA-224	W	1.00	2.3E-06	1.6E-06	3.9E-06
RN-220	*	0.00	2.3E-06	1.6E-06	3.9E-06
PO-216	W	1.00	2.3E-06	1.6E-06	3.9E-06
PB-212	D	1.00	2.3E-06	1.6E-06	3.9E-06
BI-212	W	1.00	2.3E-06	1.6E-06	3.9E-06
TL-208	D	1.00	2.3E-06	1.6E-06	3.9E-06
U-235	Y	1.00	3.4E-06	2.3E-06	5.7E-06

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	112 cm/y
Mixing Height:	1000 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	9.10	18.30
Diameter (m):	2.40	9.80
Plume Rise Momentum (m/s): (Exit Velocity)	1.70E+01	3.15E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.076	0.000	0.008
Fraction From Assessment Area:	0.924	1.000	0.992
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

20	50	100	200	250	300	350	400	450	500

ATTACHMENT 2
CAP88-PC SUMMARY REPORT FOR
ELEVATED FLEX-KLEEN AND GROUND-LEVEL AAF RELEASE
(MAXIMALLY-EXPOSED INDIVIDUAL)

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Mar 27, 1997 7:45 am

Facility: Shieldalloy Metallurgical Corporation
Address: West Boulevard
Post Office Box 768
City: Newfield
State: NJ Zip: 08344

Effective Dose Equivalent
(mrem/year)

1.37E-01

At This Location: 100 Meters East Southeast

Source Category: Ferrocolumbium Emissions from Stacks
Source Type: Stack
Emission Year: 1996

Comments: Stack Test Results from IER-14058-01
AAF Assumed to Exhibit Ground-level Release

Dataset Name: SMC-1996-GrndAAF
Dataset Date: Mar 27, 1997 7:44 am
Wind File: WNDFILES\ILG1058.WND

MAXIMALLY EXPOSED INDIVIDUAL
(RN-222 Working Level Calculations Excluded)

Location Of The Individual: 100 Meters East Southeast
Lifetime Fatal Cancer Risk: 1.96E-06

ORGAN DOSE EQUIVALENT SUMMARY
(RN-222 Working Level Calculations Excluded)

Organ	Dose Equivalent (mrem/y)
GONADS	3.09E-02
BREAST	2.90E-02
R MAR	4.83E-02
LUNGS	8.12E-01
THYROID	2.93E-02
ENDOST	3.52E-01
RMNDR	3.38E-02
EFFEC	1.37E-01

RADIONUCLIDE EMISSIONS DURING THE YEAR 1996

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-238	Y	1.00	1.8E-04	6.8E-05	2.5E-04
TH-234	Y	1.00	1.8E-04	6.8E-05	2.5E-04
PA-234	Y	1.00	1.8E-04	6.8E-05	2.5E-04
U-234	Y	1.00	4.1E-05	1.7E-05	5.8E-05
TH-230	Y	1.00	1.9E-05	6.6E-06	2.5E-05
RA-226	W	1.00	1.9E-05	6.6E-06	2.5E-05
RN-222	*	0.00	1.9E-05	6.6E-06	2.5E-05
PO-218	W	1.00	1.9E-05	6.6E-06	2.5E-05
PB-214	D	1.00	1.9E-05	6.6E-06	2.5E-05
BI-214	W	1.00	1.9E-05	6.6E-06	2.5E-05
PO-214	W	1.00	1.9E-05	6.6E-06	2.5E-05
PB-210	D	1.00	1.9E-05	6.6E-06	2.5E-05
BI-210	W	1.00	1.9E-05	6.6E-06	2.5E-05
PO-210	W	1.00	1.9E-05	6.6E-06	2.5E-05
TH-232	Y	1.00	4.4E-06	2.2E-06	6.6E-06
RA-228	W	1.00	4.4E-06	2.2E-06	6.6E-06
AC-228	Y	1.00	4.4E-06	2.2E-06	6.6E-06
TH-228	Y	1.00	2.3E-06	1.6E-06	3.9E-06
RA-224	W	1.00	2.3E-06	1.6E-06	3.9E-06
RN-220	*	0.00	2.3E-06	1.6E-06	3.9E-06
PO-216	W	1.00	2.3E-06	1.6E-06	3.9E-06
PB-212	D	1.00	2.3E-06	1.6E-06	3.9E-06
BI-212	W	1.00	2.3E-06	1.6E-06	3.9E-06
TL-208	D	1.00	2.3E-06	1.6E-06	3.9E-06
U-235	Y	1.00	3.4E-06	2.3E-06	5.7E-06

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	112 cm/y
Mixing Height:	1000 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	9.10	0.00
Diameter (m):	2.40	9.80
Plume Rise Momentum (m/s): (Exit Velocity)	1.70E+01	3.15E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.076	0.000	0.008
Fraction From Assessment Area:	0.924	1.000	0.992
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

20	50	100	200	250	300	350	400	450	500

ATTACHMENT 3
CAP88-PC SUMMARY REPORT FOR ELEVATED STACK RELEASE
(NEAREST OFF-SITE RESIDENT)

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Mar 27, 1997 7:42 am

Facility: Shieldalloy Metallurgical Corporation
Address: West Boulevard
Post Office Box 768
City: Newfield
State: NJ Zip: 08344

Effective Dose Equivalent
(mrem/year)

4.04E-02

At This Location: 148 Meters East Southeast

Source Category: Ferrocolumbium Emissions from Stacks
Source Type: Stack
Emission Year: 1996

Comments: Stack Test Results from IER-14058-01
Dose to Nearest Resident

Dataset Name: smc-max
Dataset Date: Mar 27, 1997 7:42 am
Wind File: WNDFILES\ILG1058.WND

MAXIMALLY EXPOSED INDIVIDUAL
(RN-222 Working Level Calculations Excluded)

Location Of The Individual: 148 Meters East Southeast
Lifetime Fatal Cancer Risk: 6.12E-07

ORGAN DOSE EQUIVALENT SUMMARY
(RN-222 Working Level Calculations Excluded)

Organ	Dose Equivalent (mrem/y)
GONADS	1.40E-02
BREAST	1.31E-02
R MAR	1.88E-02
LUNGS	1.99E-01
THYROID	1.32E-02
ENDOST	1.21E-01
RMNDR	1.58E-02
EFFEC	4.04E-02

RADIONUCLIDE EMISSIONS DURING THE YEAR 1996

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-238	Y	1.00	1.8E-04	6.8E-05	2.5E-04
TH-234	Y	1.00	1.8E-04	6.8E-05	2.5E-04
PA-234	Y	1.00	1.8E-04	6.8E-05	2.5E-04
U-234	Y	1.00	4.1E-05	1.7E-05	5.8E-05
TH-230	Y	1.00	1.9E-05	6.6E-06	2.5E-05
RA-226	W	1.00	1.9E-05	6.6E-06	2.5E-05
RN-222	*	0.00	1.9E-05	6.6E-06	2.5E-05
PO-218	W	1.00	1.9E-05	6.6E-06	2.5E-05
PB-214	D	1.00	1.9E-05	6.6E-06	2.5E-05
BI-214	W	1.00	1.9E-05	6.6E-06	2.5E-05
PO-214	W	1.00	1.9E-05	6.6E-06	2.5E-05
PB-210	D	1.00	1.9E-05	6.6E-06	2.5E-05
BI-210	W	1.00	1.9E-05	6.6E-06	2.5E-05
PO-210	W	1.00	1.9E-05	6.6E-06	2.5E-05
TH-232	Y	1.00	4.4E-06	2.2E-06	6.6E-06
RA-228	W	1.00	4.4E-06	2.2E-06	6.6E-06
AC-228	Y	1.00	4.4E-06	2.2E-06	6.6E-06
TH-228	Y	1.00	2.3E-06	1.6E-06	3.9E-06
RA-224	W	1.00	2.3E-06	1.6E-06	3.9E-06
RN-220	*	0.00	2.3E-06	1.6E-06	3.9E-06
PO-216	W	1.00	2.3E-06	1.6E-06	3.9E-06
PB-212	D	1.00	2.3E-06	1.6E-06	3.9E-06
BI-212	W	1.00	2.3E-06	1.6E-06	3.9E-06
TL-208	D	1.00	2.3E-06	1.6E-06	3.9E-06
U-235	Y	1.00	3.4E-06	2.3E-06	5.7E-06

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	112 cm/y
Mixing Height:	1000 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	9.10	18.30
Diameter (m):	2.40	9.80
Plume Rise Momentum (m/s): (Exit Velocity)	1.70E+01	3.15E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.076	0.000	0.008
Fraction From Assessment Area:	0.924	1.000	0.992
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

148

ATTACHMENT 4
CAP88-PC SUMMARY REPORT FOR
ELEVATED FLEX-KLEEN AND GROUND-LEVEL AAF RELEASE
(NEAREST OFF-SITE RESIDENT)

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Mar 27, 1997 8:19 am

Facility: Shieldalloy Metallurgical Corporation
Address: West Boulevard
Post Office Box 768
City: Newfield
State: NJ Zip: 08344

Effective Dose Equivalent
(mrem/year)

1.24E-01

At This Location: 148 Meters East Southeast

Source Category: FeCb Emissions-Dose to nearest resident
Source Type: Stack
Emission Year: 1996

Comments: Stack Test Results from IER-14058-01
AAF stack assumed to exhibit ground-level release

Dataset Name: smc-grnd-max
Dataset Date: Mar 27, 1997 8:19 am
Wind File: WNDFILES\ILG1058.WND

MAXIMALLY EXPOSED INDIVIDUAL
(RN-222 Working Level Calculations Excluded)

Location Of The Individual: 148 Meters East Southeast
Lifetime Fatal Cancer Risk: 1.75E-06

ORGAN DOSE EQUIVALENT SUMMARY
(RN-222 Working Level Calculations Excluded)

Organ	Dose Equivalent (mrem/y)
GONADS	2.51E-02
BREAST	2.36E-02
R MAR	4.26E-02
LUNGS	7.47E-01
THYROID	2.38E-02
ENDOST	3.29E-01
RMNDR	2.93E-02
EFFEC	1.24E-01

RADIONUCLIDE EMISSIONS DURING THE YEAR 1996

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-238	Y	1.00	1.8E-04	6.8E-05	2.5E-04
TH-234	Y	1.00	1.8E-04	6.8E-05	2.5E-04
PA-234	Y	1.00	1.8E-04	6.8E-05	2.5E-04
U-234	Y	1.00	4.1E-05	1.7E-05	5.8E-05
TH-230	Y	1.00	1.9E-05	6.6E-06	2.5E-05
RA-226	W	1.00	1.9E-05	6.6E-06	2.5E-05
RN-222	*	0.00	1.9E-05	6.6E-06	2.5E-05
PO-218	W	1.00	1.9E-05	6.6E-06	2.5E-05
PB-214	D	1.00	1.9E-05	6.6E-06	2.5E-05
BI-214	W	1.00	1.9E-05	6.6E-06	2.5E-05
PO-214	W	1.00	1.9E-05	6.6E-06	2.5E-05
PB-210	D	1.00	1.9E-05	6.6E-06	2.5E-05
BI-210	W	1.00	1.9E-05	6.6E-06	2.5E-05
PO-210	W	1.00	1.9E-05	6.6E-06	2.5E-05
TH-232	Y	1.00	4.4E-06	2.2E-06	6.6E-06
RA-228	W	1.00	4.4E-06	2.2E-06	6.6E-06
AC-228	Y	1.00	4.4E-06	2.2E-06	6.6E-06
TH-228	Y	1.00	2.3E-06	1.6E-06	3.9E-06
RA-224	W	1.00	2.3E-06	1.6E-06	3.9E-06
RN-220	*	0.00	2.3E-06	1.6E-06	3.9E-06
PO-216	W	1.00	2.3E-06	1.6E-06	3.9E-06
PB-212	D	1.00	2.3E-06	1.6E-06	3.9E-06
BI-212	W	1.00	2.3E-06	1.6E-06	3.9E-06
TL-208	D	1.00	2.3E-06	1.6E-06	3.9E-06
U-235	Y	1.00	3.4E-06	2.3E-06	5.7E-06

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	112 cm/y
Mixing Height:	1000 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	9.10	0.00
Diameter (m):	2.40	9.80
Plume Rise Momentum (m/s): (Exit Velocity)	1.70E+01	3.15E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.076	0.000	0.008
Fraction From Assessment Area:	0.924	1.000	0.992
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

148