



DEPARTMENT OF THE ARMY

ST. LOUIS DISTRICT, CORPS OF ENGINEERS  
1222 SPRUCE STREET  
ST. LOUIS, MISSOURI 63103-2833

116-GDA-GAM 88038  
SL-1318

REPLY TO  
ATTENTION OF:

December 2, 1997

SLDS  
Administrative  
Record  
9810191029

Mr. Jack Fraenhoffer  
Environmental Project Manager  
Mallinckrodt Chemical, Inc.  
Mallinckrodt & Second Streets  
P.O. Box 5439  
St. Louis, MO 63147

RE: ST. LOUIS DOWNTOWN SITE (SLDS) AIR MONITORING RESULTS DURING BUILDING  
DEMOLITION

Dear Mr. Fraenhoffer:

This letter transmits air monitoring results associated with particulate air samples collected during building demolition activities at the St. Louis Downtown Site (SLDS). A brief discussion and interpretation of these results is also included.

From July 2, 1997 through November 2, 1997, daily perimeter air monitoring samples were collected to identify and quantify potential airborne contaminants resulting from demolition activities. The process involved collecting the contaminant from a volume of air by passing it through a specific filter at a known flow rate, to remove the contaminated particles. The filter media was then analyzed for the potential contaminants. Negative results are reported when naturally occurring background radiation is subtracted from the measured concentration. This often occurs when the measured results is at or below the Minimum Detectable Activity (MDA).

Interpretation of the sample results was performed by comparing them to the Derived Concentration Guide (DCG), specified in the Department of Energy (DOE) Order 5400.5. The DCG is the value used for evaluating exposure through inhalation of radionuclides by members of the public. Airborne concentrations of 100 % DCG, if inhaled for a full year, would result in 100 mRem of internal exposure, the DOE yearly exposure limit to members of the public. Based on the review of the data associated with air monitoring samples collected at SLDS, it has been determined that the daily airborne concentrations of radionuclides during demolition were well below the DCG.

The SLDS Building Demolition project has been a very successful collaborative effort between FUSRAP and Mallinckrodt. We look forward to continuing our successful relationship during future remediations at SLDS. Please contact me any questions or comments regarding this information.

Sincerely,

Louis A. Dell'Orco,  
Deputy Project Manager

Enclosure

CC: Bob Boland, Mallinckrodt  
Robert Geller, MDNR  
Daniel Wall, EPA

# SLDS Building Demolition Project Air Monitoring Summary (1997)

## (SLDS Department of Energy Facility)

Sample Date	Sample Type/Method	Location / Description	ACTIVITY ( $\mu\text{Ci/ml}$ )	%DCG
07/02/97	Environmental (Background)	Bldg. 116, East	-1.15E-14	-11.50
07/02/97	Environmental (Background)	Bldg. 116, West	4.76E-15	4.76
07/02/97	Environmental (Background)	Bldg. 700/708, East	-1.15E-14	-11.50
07/02/97	Environmental (Background)	Bldg. 705, South	5.93E-15	5.93
07/02/97	Environmental (Background)	Bldg. 116, South	-1.38E-14	-13.83
07/03/97	Environmental (Background)	Bldg. 116, West	5.93E-15	5.93
07/03/97	Environmental (Background)	Bldg. 116, East	-9.18E-15	-9.18
07/03/97	Environmental (Background)	Bldg. 705/706, East	-4.27E-15	-4.27
08/11/97	Environmental	Bldg. 705/706, North	-2.52E-15	-2.52
08/11/97	Environmental	Bldg. 705/706, South	8.85E-15	8.85
08/11/97	Environmental	Bldg. 705/706, East	-8.45E-15	-8.45
08/14/97	Environmental	Bldg. 705/706, North	-6.88E-16	-0.69
08/14/97	Environmental	Bldg. 705/706, South	-3.64E-15	-3.64
08/14/97	Environmental	Bldg. 705/706, East	2.87E-16	0.29
08/14/97	Environmental	Bldg. 705/706, West	1.08E-14	10.84
08/18/97	Environmental	Bldg. 705/706, North	-1.12E-14	-11.24
08/18/97	Environmental	Bldg. 705/706, West	2.12E-15	2.12
08/18/97	Environmental	Bldg. 705/706, South	2.43E-14	24.28
08/18/97	Environmental	Bldg. 705/706, East	-1.75E-14	-17.52
08/18/97	Environmental	Bldg. 705/706, North	2.64E-16	0.26
08/20/97	Environmental	Bldg. 705/706, East	1.06E-14	10.56
08/20/97	Environmental	Bldg. 705/706, West	-7.39E-15	-7.39
08/20/97	Environmental	Bldg. 705/706, East	1.07E-15	1.07
08/21/97	Environmental	Bldg. 705/706, South	1.66E-14	16.56
08/21/97	Environmental	Bldg. 705/706, West	-6.77E-15	-6.77
08/21/97	Environmental	Bldg. 705/706, South	7.84E-14	78.44
08/22/97	Environmental	Bldg. 705/706, North	1.12E-14	11.21
08/22/97	Environmental	Bldg. 705/706, West	-6.30E-15	-6.30
08/22/97	Environmental	Bldg. 705/706, North	1.22E-15	1.22
08/22/97	Environmental	Bldg. 705/706, North	5.90E-15	5.90
08/26/97	Environmental	Bldg. 705/706, South	-2.87E-14	-28.75
08/26/97	Environmental	Bldg. 705/706, East	-1.74E-15	-1.75
08/26/97	Environmental	Bldg. 705/706, North	5.05E-15	5.05
08/25/97	Environmental	Bldg. 705/706, East	-6.61E-15	-6.61
08/25/97	Environmental	Bldg. 705/706, South	7.89E-15	7.89
08/25/97	Environmental	Bldg. 705/706, East	2.29E-15	2.29
08/27/97	Environmental	Bldg. 705/706, South	2.07E-15	2.07
08/27/97	Environmental	Bldg. 705/706, East	8.34E-15	8.34
08/27/97	Environmental	Bldg. 705/706, North	-8.10E-15	-8.10
08/28/97	Environmental	Bldg. 705/706, North	-6.26E-15	-6.26
08/28/97	Environmental	Bldg. 705/706, South	-7.08E-15	-7.08
08/29/97	Environmental	Bldg. 705/706, North	-1.37E-14	-13.73
08/29/97	Environmental	Bldg. 705/706, South	7.35E-15	7.00
08/29/97	Environmental	Bldg. 705/706, East	-3.52E-15	0.35
08/29/97	Environmental	Bldg. 705/706, East	9.89E-16	0.99
09/02/97	Environmental	Bldg. 705/706, South	1.01E-15	1.01

Sample results based on (U238):  
DCG - 1E-13  $\mu\text{Ci/ml}$

# SLDS Building Demolition Project Air Monitoring Summary (1997)

(SLDS Department of Energy Facility)

Sample Date	Sample Type/Method	Location / Description	ACTIVITY ( $\mu\text{Ci}/\text{ml}$ )	%DCG
09/02/97	Environmental	Bldg. 705/706, North	4.48E-15	4.48
09/03/97	Environmental	Bldg. 705/706, East	-4.27E-15	-4.27
09/03/97	Environmental	Bldg. 705/706, North	4.53E-15	4.53
09/03/97	Environmental	Bldg. 705/706, South	-2.51E-15	-2.51
09/04/97	Environmental	Bldg. 705/706, North	-5.03E-15	-5.03
09/04/97	Environmental	Bldg. 705/706, South	-9.55E-15	-9.55
09/05/97	Environmental	Bldg. 705/706, East	-2.45E-15	-2.45
09/05/97	Environmental	Bldg. 705/706, North	-1.00E-14	-10.02
09/09/97	Environmental	Bldg. 116/117, North West	-4.90E-15	-4.90
09/09/97	Environmental	Bldg. 116/117, South	1.14E-14	11.37
09/09/97	Environmental	Bldg. 116/117, East	1.24E-14	12.38
09/10/97	Environmental	Bldg. 705, South	7.75E-15	7.75
09/10/97	Environmental	Bldg. 116/117, North West	5.79E-15	5.79
09/10/97	Environmental	Bldg. 705, South	6.64E-14	66.41
09/11/97	Environmental	Bldg. 116/117, North West	9.47E-15	9.47
09/11/97	Environmental	Bldg. 116/117, East	6.13E-15	6.13
09/11/97	Environmental	Bldg. 705, South	2.38E-14	23.80
09/12/97	Environmental	Bldg. 116/117, North West	9.25E-15	9.25
09/12/97	Environmental	Bldg. 705, East	2.59E-14	25.88
09/15/97	Environmental	Bldg. 116/117, South	1.63E-14	16.26
09/15/97	Environmental	Bldg. 116/117, East	2.14E-14	21.41
09/15/97	Environmental	Bldg. 116/117, North West	5.35E-15	5.35
09/16/97	Environmental	Bldg. 116/117, South	1.22E-14	12.20
09/16/97	Environmental	Bldg. 116/117, North West	9.71E-15	9.71
09/17/97	Environmental	Bldg. 705, East	1.78E-14	17.77
09/17/97	Environmental	Bldg. 116/117, South	4.20E-15	4.20
09/17/97	Environmental	Bldg. 116/117, North West	1.16E-14	11.60
09/18/97	Environmental	Bldg. 116/117, South	5.94E-15	5.94
09/18/97	Environmental	Bldg. 116/117, North West	4.66E-15	4.66
09/18/97	Environmental	Bldg. 116/117, East	2.30E-15	2.30
09/19/97	Environmental	Bldg. 116/117, East	2.15E-15	2.15
09/19/97	Environmental	Bldg. 116/117, East	-6.18E-15	-6.18
09/19/97	Environmental	Bldg. 705, North West	3.38E-15	3.38
09/19/97	Environmental	Bldg. 116/117, North West	-9.69E-15	-9.69
09/22/97	Environmental	Bldg. 705, South	-1.20E-16	-0.12
09/25/97	Environmental	Bldg. 116/117, North West	8.21E-15	8.21
09/25/97	Environmental	Bldg. 705, South	2.00E-15	2.00
09/26/97	Environmental	Bldg. 116/117, East	4.60E-15	4.60
09/26/97	Environmental	Bldg. 116/117, North West	-5.78E-15	-5.78
09/26/97	Environmental	Bldg. 705, South	7.93E-15	7.93
09/29/97	Environmental	Bldg. 116/117, East	1.52E-14	15.17
09/29/97	Environmental	Bldg. 116/117, North West	2.02E-15	2.02
09/29/97	Environmental	Bldg. 705, South	6.52E-15	6.52
09/30/97	Environmental	Bldg. 116/117, East	-4.02E-15	-4.02
09/30/97	Environmental	Bldg. 116/117, North West	6.69E-15	6.69
09/30/97	Environmental	Bldg. 705, South	1.06E-14	10.57

Sample results based on (U238):  
DCG - 1E-13  $\mu\text{Ci}/\text{ml}$

# SLDS Building Demolition Project Air Monitoring Summary (1997)

(SLDS Department of Energy Facility)

Sample Date	Sample Type/Method	Location / Description	ACTIVITY (μCi/ml)	%DCG
10/01/97	Environmental	Bldg. 116/117, East	9.96E-15	9.96
10/01/97	Environmental	Bldg. 116/117, North West	-5.19E-15	-5.19
10/01/97	Environmental	Bldg. 705, South	5.16E-15	5.16
10/02/97	Environmental	Bldg. 116/117, East	1.54E-14	15.38
10/02/97	Environmental	Bldg. 116/117, North West	2.02E-14	20.21
10/02/97	Environmental	Bldg. 705, South	1.37E-14	13.67
10/03/97	Environmental	Bldg. 116/117, East	3.24E-14	32.35
10/03/97	Environmental	Bldg. 116/117, North West	-3.46E-15	-3.46
10/03/97	Environmental	Bldg. 705, South	9.36E-15	9.36
10/06/97	Environmental	Bldg. 116/117, East	1.44E-14	14.36
10/06/97	Environmental	Bldg. 116/117, North West	-2.35E-15	-2.35
10/06/97	Environmental	Bldg. 705, South	7.62E-15	7.62
10/07/97	Environmental	Bldg. 116/117, North West	1.79E-14	17.91
10/07/97	Environmental	7S Lot	1.27E-15	1.27
10/07/97	Environmental	Bldg. 705, East	1.22E-15	1.22
10/08/97	Environmental	Bldg. 116/117, North West	7.34E-15	7.34
10/08/97	Environmental	7S Lot	2.07E-15	2.07
10/08/97	Environmental	Bldg. 705, East	8.87E-15	8.87
10/09/97	Environmental	Bldg. 116/117, North West	-2.41E-15	-2.41
10/09/97	Environmental	7S Lot	7.35E-15	7.35
10/09/97	Environmental	Bldg. 705, East	-1.07E-15	-1.07
10/10/97	Environmental	Bldg. 116/117, North West	1.21E-16	0.12
10/10/97	Environmental	7S Lot	2.06E-14	20.61
10/10/97	Environmental	Bldg. 705, East	-6.25E-15	-6.25
10/10/97	Environmental	Bldg. 116/117, North West	7.12E-15	7.12
10/14/97	Environmental	7S Lot	-1.70E-15	-1.70
10/14/97	Environmental	Bldg. 705, East	1.13E-14	11.33
10/14/97	Environmental	Bldg. 700, East	7.34E-15	7.34
10/15/97	Environmental	Rock Crusher Area	2.97E-14	29.74
10/15/97	Environmental	Bldg. 116/117, South	7.61E-17	0.08
10/16/97	Environmental	Bldg. 705, East	2.85E-15	2.85
10/16/97	Environmental	Bldg. 116/117, North West	6.94E-17	0.07
10/16/97	Environmental	Bldg. 116/117, South	8.45E-16	0.84
10/17/97	Environmental	Bldg. 705, East	7.76E-15	7.76
10/17/97	Environmental	Bldg. 705, East	1.01E-14	10.13
10/18/97	Environmental	Bldg. 116/117, North West	1.56E-14	15.64
10/19/97	Environmental	Bldg. 116/117, North West	8.84E-16	0.88
10/19/97	Environmental	Bldg. 705, East	2.01E-14	20.10
10/20/97	Environmental	Bldg. 705, East	6.70E-15	6.70
10/20/97	Environmental	Bldg. 116/117, North West	9.64E-16	0.96
10/21/97	Environmental	Bldg. 116/117, North West	2.42E-15	2.42
10/21/97	Environmental	Bldg. 705, East	9.38E-15	9.38
10/21/97	Environmental	7S Lot	-5.02E-15	-5.02
10/22/97	Environmental	Bldg. 116/117, North West	8.84E-16	0.88
10/22/97	Environmental	Bldg. 705, East	-3.50E-15	-3.50
10/22/97	Environmental	7S Lot	1.13E-14	11.30

Sample results based on (U238):  
DCG - 1E-13 uCi/ml

# SLDS Building Demolition Project Air Monitoring Summary (1997)

(SLDS Department of Energy Facility)

Sample Date	Sample Type/Method	Location / Description	ACTIVITY ( $\mu\text{Ci/ml}$ )	%DCG
10/23/97	Environmental	Bldg. 116/117, North West	-3.00E-15	-3.00
10/23/97	Environmental	Bldg. 705, East	1.20E-14	11.97
10/23/97	Environmental	7S Lot	7.48E-15	7.48
10/27/97	Environmental	Bldg. 705, East	8.68E-17	0.09
10/27/97	Environmental	Bldg. 116/117, North West	3.95E-15	3.95
10/28/97	Environmental	Bldg. 705, East	1.08E-14	10.83
10/28/97	Environmental	Bldg. 116/117, North West	5.29E-15	5.29
10/29/97	Environmental	Bldg. 705, East	8.04E-17	0.08
10/29/97	Environmental	Bldg. 116/117, North West	-7.66E-16	-0.77
10/30/97	Environmental	Bldg. 704/705, East	3.79E-15	3.79
10/30/97	Environmental	Bldg. 116/117, North West	4.97E-15	4.97
10/31/97	Environmental	Bldg. 704/705, East	1.70E-14	17.00
10/31/97	Environmental	Bldg. 116/117, North West	1.09E-14	10.94
11/01/97	Environmental	Bldg. 704/705, East	2.61E-14	26.11
11/01/97	Environmental	Bldg. 116/117, North West	4.24E-15	4.24
11/02/97	Environmental	Bldg. 704/705, East	3.87E-15	3.87
11/02/97	Environmental	Bldg. 116/117, North West	6.30E-15	6.30

Sample results based on (U238):  
DCG -  $1\text{E-}13 \text{ uCi/ml}$