



**Department of Energy**

Albuquerque Operations Office  
Los Alamos Area Office  
Los Alamos, New Mexico 87544

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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Benito Garcia, Bureau Chief  
Hazardous and Radioactive Materials Bureau  
New Mexico Environment Department  
2044 Galisteo St., Building A  
P. O. Box 26110  
Santa Fe, New Mexico 87505



Dear Mr. Garcia:

Subject: Proposed Alternative Demonstration of Decontamination Under Approved Closure Plan for the Controlled Air Incinerator (CAI) Located at Technical Area 50, Building 37, Los Alamos National Laboratory

The purpose of this letter is to request approval of an alternative demonstration of decontamination as provided in *Section E.4.5, Verification of Decontamination*, in the Closure Plan for the CAI that was approved by the New Mexico Environment Department on July 1, 1996. This letter also requests approval of a determination that decontamination is not required for the exhaust stack system of the CAI. The basis for each of these requests is discussed below.

Alternative Demonstration of Decontamination

Initial sampling of the components of the CAI showed the presence of low levels of hazardous metals in most of the components. Low levels of several organic constituents were also found in one component (the solid waste feed glove box/elevator). The CAI Closure Plan provides that "If RCRA hazardous contamination is found, components amenable to decontamination will be cleaned with detergent solution and/or steam cleaning." The Closure Plan also specifies that "Successful decontamination for each component is defined as one of the following: (1) No detectable hazardous constituents in the final sample; (2) Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused wash water or background sample. An alternative demonstration of decontamination may be proposed and justified at the time of closure as circumstances dictate..."

The components of the CAI that were found to have hazardous constituents, and that were amenable to decontamination, have been steam cleaned or washed with detergent solution. Most components have also been decontaminated a second time. However, concentrations of some metals in the final rinsate solution remain above those of the clean water samples used as background. Results for the analysis of the decontamination samples analyzed to date are shown in the enclosed table entitled "Controlled Air Incinerator Final Rinsate Metal Analyses." Many of the metals were not detected in the clean water sample, and the detection limits are extremely low. Some metal surfaces are also corroded, and we believe that particles of corroded metal are released to the rinse water and that these contribute to the reported results. Based upon the results to date, it is questionable whether it will be possible to achieve the background levels for all metals, even though the levels in the rinsate are extremely low.

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Because the CAI components that are being decontaminated are constructed of metal alloys, it is not possible to collect a valid sample to determine levels under the Toxicity Characteristic Leaching Procedure (TCLP). Samples for TCLP analysis were collected from the components lined with refractory, and these samples demonstrated that the levels of all metals were below the TCLP levels even though one of the refractory-lined components (the quench tower) showed the highest levels of most hazardous metals of all of the CAI components in the initial swipe sampling for hazardous constituents. This would indicate that the CAI components would probably not have been classified as RCRA regulated even before decontamination if it were possible to collect a valid sample for TCLP analysis.

Based upon these circumstances, we request consideration and approval of the following performance standards as an alternative demonstration of decontamination in the Closure Plan for the CAI:

“Successful decontamination for each component is defined as one of the following:

1. Detectable hazardous constituents in the final rinsate sample are equal to or less than the risk-based concentrations presented in the latest version of the U. S. Environmental Protection Agency (EPA) Region III Risk-Based Concentration Table (enclosed).
2. Repeated decontamination efforts result in less than one order of magnitude reduction in hazardous constituent concentrations in the rinsate.
3. Comparison of the concentrations in the final rinsate to the TCLP levels for the constituents detected in the rinsate, where applicable.”

We understand that the Hazardous and Radioactive Materials Bureau (HRMB) has required the use of the EPA Risk-Based Concentrations for a Closure Plan at another permitted facility, and we believe that these levels are protective of the environment. If repeated decontamination efforts do not substantially reduce the concentration of hazardous constituents in the rinsate, then it is also unlikely that the constituents will leach into the environment. Use of the TCLP levels for comparison to the levels in the rinsate provides a measure of the potential impact to the environment of any remaining contamination of the CAI components.

The Closure Plan for the CAI also provided for maximum reuse or recycling of components, and this will further reduce the potential for leaching of contaminants to the environment. Plans are for reuse of some CAI components in a RCRA-permitted facility (the RAMROD facility for characterization of transuranic waste) that will be located at the current location of the CAI. The components to be reused in the RAMROD facility include a glove box, the HEPA-filter system, liquid scrubber solution tanks, and the exhaust stack system. Because of the projected level of radioactive materials in the RAMROD facility, it is unlikely that the components would ever be released except to a radioactive waste disposal facility even if no further contamination by hazardous materials occurs. Current plans for other CAI components are to ship them to a metal melting facility for production of shielding blocks for use in high radiation areas. Melting of the CAI components would ensure that any remaining contamination of the component surfaces by hazardous metals would not be leachable.

#### Determination of the Exhaust Stack System as Not Requiring Decontamination

In accord with the Closure Plan for the CAI, swipe samples were taken from three locations on the inner surface of the exhaust stack. Results of swipe samples collected from all of the CAI components are enclosed in the table entitled “Controlled Air Incinerator Metal Analysis Data.” Samples from the exhaust stack are labeled as “Exhaust.” A trace level of arsenic (0.34 ug/swipe, as compared to the detection limit of 0.25 ug/swipe) was detected at the sample

Benito Garcia

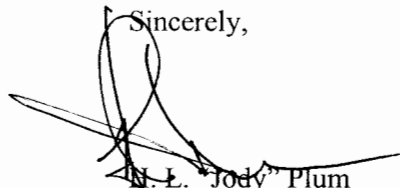
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location closest to the exhaust stack opening. No levels of arsenic or any other hazardous constituents above the Upper Tolerance Limit were detected at the other stack locations.

Arsenic is a natural component of soils in the Los Alamos area and is present at average levels of 7.82 mg/Kg (*Application of LANL Background Data to Environmental Restoration Decision Making; Pat Longmire, LANL, 1996*). The trace level detected at the top of the stack is attributed to the deposition of blowing dust and not incinerator exhaust. We request concurrence from the HRMB that decontamination of the exhaust stack system is not required based on this single sample showing trace levels of arsenic at the top of the stack.

Should you have any questions on any of the material presented, please call me at (505) 665-5042.

Sincerely,



N. L. Jody Plum  
Office of Environment  
and Projects

LAAMEP:2JP-054

Enclosures

cc w/enclosures:

S. Dinwiddie

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10/30/96

CONTROLLED AIR INCINERATOR FINAL RINSATE METAL ANALYSES ALL UNITS IN MG/L

Sample ID	Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Hg	Ni	K	Se	Ag	Na	Tl	V	Zn
UTL(99.99)		0.041	0.012	0.024	0.001	0.0003		0.0128				0.01			0.00002	0.008		0.012	0.001		0.003		
RBC		0.015	0.011	2.6	0.00002	0.018		37				0.05			0.011	0.73		0.18	0.18		0.003		
CAI-AC-5	0.037	0.003	0.004	0.013	0.0001	0.0003	10.5	0.004	0.0009	0.003	0.679	0.001	3.3	0.104	0.0004	0.008	1.96	0.004	0.001	114	0.003	0.008	0.3
AC-5 is rinsate sample from activated carbon unit																							
CAI-QT-5	0.25	0.009	0.004	.166 B	0.0001	0.0009	11.5	0.014	0.003	0.014	1.1	0.016	2.2	0.023	.00009 B	0.118	2.16	0.002	0.001	12.1	.004 B	.011	0.27
QT-5 is rinsate sample from the quench tower																							
CAI-QT-10																							
CAI-QT-15																							
CAI-QT-20																							
CAI-AT-5	3.35	.0174 B	0.011	1.26	0.0003	.0044 B	41	0.394	0.039	0.489	33.7	.0324 B	8.9	0.507	0.0003	.218 B	18.8	0.005	0	.003 B	.006 B	0.023	2.3
AT-5 is first rinsate sample from the absorber tower																							
CAI-AT-10	0.109	.023 B	.002 B	.061 B	.0001 B	0.005	15.2	0.025	.005 B	0.05	0.423	0.014	2.8	0.049	.0002 B	0.507	2.88	.002 B	.001 U	13	.003 B	.013 B	0.263
AT-10 is sample of second rinse of absorber tower																							
CAI-SF-8	1.36	.011 B	0.002	.111 B	0.0001	0.013	12.7	0.323	0.009	0.356	8.04	.0058 B	2	0.483	0.0004	0.222	4.97	0.002	0.001	15.4	.005 B	0.008	4.76
SF-8 is first rinsate sample from RAM elevator																							
CAI-SF-9	1.38	.0119 B	0.002	.116 B	0.0001	0.013	12.8	0.307	0.009	0.36	9.07	.0062 B	2.04	0.465	0.0004	0.221	4.88	0.003	0.001	15.3	0.003	0.008	4.59
SF-9 is a duplicate of SF-8																							
CAI-SF-10	0.18	0.031	.0018 B	.026 B	0.0001	.003 B	12.5	0.019	0.002	0.007	11.2	0.03	5.64	0.081	.0002 B	0.048	2.27	0.002	0.0001	13.7	0.003	0.011	1.09
SF-10 is rinsate sample from RAM glovebox																							
CAI-SF-11	0.264	.023 B	.002 B	.035 B	.0001 U	.002 B	11	0.081	.001 B	0.032	2.4	0.009	2.86	0.092	.0001 B	0.041	2.86	0.002	0.001	13.5	.003 U	.010 B	0.332
SF-11 is second rinsate sample from RAM elevator																							
CAI-SF-20																							
CAI-VNT-1	0.017	0.003	0.003	0.024	0.0001	0.0003	11.8	0.005	0.0005	0.006	0.057	0.0001	2.79	0.003	0.00002	.018 B	2.14	0.002	0.001	12.6	0.003	0.01	0.063
CAI-H-1	0.04	0.003	0.005	0.022	0.0001	0.0003	12.3	0.006	0.0004	0.007	0.088	0.002	0.928	0.003	.00003 B	.011 B	1.9	0.002	0.001	14.9	0.003	0.012	0.071
CAI-DE-1	0.012	0.003	0.002	0.023	0.0001	0.0003	12.9	0.005	0.0004	0.006	0.085	0.006	1.28	0.002	.00003 B	.009 B	1.88	0.002	0.001	14.4	0.003	0.012	0.036
CAI-FG-1	0.013	0.003	0.005	0.019	0.0001	0.0003	10	0.004	0.0006	0.005	0.051	0.002	1.16	0.002	0.00002	.010 B	1.81	0.003	0.001	12.9	0.003	0.011	0.014
CAI-AR-10	.040 B	.003 U	.005 B	.024 B	.0001 U	.0003 U	11	.006 B	.0004 B	.005 B	0.382	0.007	1.46	0.097	.00002 B	.006 B	2.15	.002 U	.001 U	13.1	.004 B	0.011	0.108
AR-10 is rinsate sample from ash removal system valve																							
CAI-RH-1	0.007	0.003	0.004	.044 B	.0001 U	.002 B	11.6	0.038	.0004 U	.004 B	0.377	.001 U	2.84	0.023	0.0003	0.069	2.47	.002 U	.001 U	13.7	.003 U	.009 B	0.052
RH-1 is rinsate sample from reheater																							
CAI-HP-10	0.013	.005 B	.005 B	0.028	.0001 U	.003 B	11.7	.007 B	.001 B	.023 B	0.562	0.048	2.04	0.033	.0002 B	.034 B	2.15	.002 U	.001 U	13	.003 U	.008 B	0.194
HP-10 is rinsate sample from riser before HEPA bank																							
CAI-HP-11	0.491	.012 B	.004 B	.041 B	.0004 B	.0024 B	18.2	0.157	.006 B	0.069	1.69	0.018	3.19	0.126	.0002 B	0.116	2.67	0.018	.001 U	16.6	.003 U	0.011	0.273
HP-11 is rinsate sample from one of the HEPA banks																							
CAI-HP-12	0.488	.051 B	.004 B	.046 B	0.0001	0.007	14.8	1	.012 B	0.13	5.16	0.021	3.35	0.199	0.0005	0.548	2.7	0.011	.001 U	25.6	.005 B	0.015	0.589
HP-12 IS A SAMPLE OF PRE-WASH WATER WITH ALCONOX																							
CAI-HP-14	0.206	0.004	0.003	0.037	0.0001	.0038 B	13.5	0.202	.004 B	0.044	6.01	.0081 B	2.73	0.119	.0001 B	0.182	2.41	.004 B	.001 U	14.3	.003 U	0.011	0.629
HP-14 is rinsate sample from the ductwork after the HEPA banks																							
CAI-ST-10	0.036	0.004	0.005	0.027	0.0004	0.001	10.8	0.008	0.001	0.003	0.175	0.009	2.29	0.002	0.00004	0.019	1.89	0.003	0.0007	12	0.003	0.01	0.046
CAI-ST-11	0.302	0.004	0.005	0.053	0.0004	0.007	13.3	0.041	0.011	0.078	1.89	.0073 B	2.56	0.015	0.0002	.107 B	1.95	0.003	0.0007	12.2	0.003	0.02	2.67
CAI-ST-12	0.026	0.004	0.003	0.024	0.00007	0.0002	10.9	0.005	0.0007	0.0004	0.083	0.001	2.75	0.0009	0.00003	0.018	2.05	0.007	0.0007	12	.003 U	0.01	0.647
CAI-ST-12 is final rinsate from tank with Ni contamination																							

BASELINE PRE-RINSE WATER SAMPLES

CAI-QT-4	0.044	0.005	0.005	0.019	0.0001	0.0003	7.54	0.005	0.0009	0.003	4.13	0.001	0.683	0.021	0.00002	0.0003	1.77	0.005	0.001	11.2	0.003	0.009	0.117
CAI-AT-4	0.116	0.003	0.003	0.019	0.0003	0.0003	10.3	0.002	0.0004	0.0005	2.95	0.001	1.44	0.002	0.00002	0.0006	1.69	0.003	0.001	12.8	0.003	0.009	0.107
CAI-DW-1	0.01	0.003	0.004	0.02	0.0003	0.0003	9.83	0.002	0.0004	0.008	0.182	0.003	1.95	0.004	0.00002	0.002	1.9	0.003	0.001	12.9	0.003	0.009	0.053
CAI-DW-2	0.01	0.003	0.002	0.02	0.0001	0.0003	9.92	0.002	0.0004	0.008	0.202	0.003	2.09	0.004	0.00002	0.002	1.87	0.002	0.001	12.9	0.003	0.009	0.064
CAI-DW-3	0.01	0.003	0.003	0.019	0.0001	0.0003	9.89	0.002	0.0004	0.007	0.209	0.003	2	0.004	0.00002	0.002	1.87	0.002	0.001	1.29	0.003	0.009	0.055
MEAN	0.038	0.0034	0.0034	0.0194	0.00018	0.0003	9.496	0.0026	0.0005	0.0053	1.8346	0.0022	1.6326	0.007	0.00002	0.00138	1.82	0.003	0.001	10.218	0.003	0.009	0.0792
STD DEV	0.046022	0.00089	0.00114	0.00053	0.00011	0	1.1089	0.00134	0.00022	0.00338	1.8776	0.00110	0.58817	0.0079	0	0.000856	0.088	0.001225	0	5.0430	0	0	0.030434

SHADED CELLS INDICATE RCRA METALS WHERE CONCENTRATIONS ARE GREATER THAN UTLs, RBCs, OR MCLs. NO RBC FOR Pb. VALUE PRESENTED IS A MCL  
 RCRA METALS INCLUDE Sb, As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag and Tl

CAI-VNT-1, CAI-H-1, CAI-DE-1 AND CAI-FG-1 ARE SECTIONS OF THE CROSS-OVER DUCT FROM THE ABSORPTION TOWER TO THE HEPAS

CAI-SF-9 IS A DUPLICATE OF CAI-SF-8

**Controlled Air Incinerator Metal Analysis Data**  
**All Reported Data in µg/swipe**

CAI-JP-1 (TCLP) units in mg/L.

Section	Location ID	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury	Nickel	Selenium	Silver	Thallium
Reporting Limit		0.25	0.25	0.25	0.05	0.05	0.05	0.15	0.01	0.1	0.25	0.1	0.4
Upper Tolerance Limit		16.75	0.25	371	0.05	0.25	152.6	6.17	0.01	90.6	0.25	0.1	0.4
Glove Box	CAI-GB-1	12	0.25	190	0.05	0.03	68	2.9	0.01	41	0.25	0.01	0.4
Glove Box	CAI-GB-2	10	0.25	240	0.05	0.03	38	1.2	0.01	25	0.25	0.01	0.4
Glove Box	CAI-GB-3	11	0.25	210	0.05	0.1	29	1	0.01	21	0.25	0.01	0.4
Glove Box	CAI-GB-4	12	0.25	160	0.05	0.08	28	1.4	0.01	15	0.25	0.01	0.4
Glove Box	CAI-GB-5	10	0.25	180	0.05	0.03	13	0.91	0.01	10	0.25	0.01	0.4
Absorb. Tower	CAI-AT-1	15	0.26	290	ND	0.41	9.3	3.7	0.018	22	ND	ND	ND
Absorb. Tower	CAI-AT-2	13	0.31	270	ND	0.17	14	0.1	0.06	66	ND	0.12	ND
Absorb. Tower	CAI-AT-3	10	0.13	180	ND	ND	16	1.1	0.028	59	ND	ND	ND
HEPA	CAI-HP-1	10	0.28	250	ND	0.11	31	2.5	0.09	34	ND	ND	ND
HEPA	CAI-HP-2	10	ND	160	ND	0.09	28	4	0.017	18	ND	0.16	ND
HEPA	CAI-HP-3	8.6	ND	270	ND	ND	24	0.52	ND	30	ND	ND	ND
HEPA	CAI-HP-4	8.1	ND	240	ND	0.06	9.4	1.1	0.025	7.5	ND	ND	ND
HEPA	CAI-HP-5 #	11	ND	160	ND	ND	2.2	0.24	ND	0.64	ND	ND	ND
Solid Feed	CAI-SF-1	11	0.84	130	0.06	ND	250	3.4	0.06	59	ND**	ND	ND**
Solid Feed	CAI-SF-2	15	0.83	250	0.06	0.08	13	2	0.09	10	ND	ND	ND
Solid Feed	CAI-SF-3	25	0.91	270	0.06	0.09	31	60	0.3	17	ND**	ND	ND**
Solid Feed	CAI-SF-4 #	10	0.13	250	0.08	ND	3.8	0.3	ND	4.6	ND	ND	ND
Solid Feed	CAI-SF-5 (DECON)	13	ND	120	ND	ND	1.3	0.25	ND	0.26	ND	ND	ND
Solid Feed	CAI-SF-6												
Solid Feed	CAI-SF-7#												
Activated Carbon	CAI-AC-1	11	0.15	200	0.08	0.48	62	26	3.1	100	0.36	0.19	ND
Activated Carbon	CAI-AC-2	9.3	0.54	170	ND	0.14	31	7.1	5.2	38	ND	ND	ND
Activated Carbon	CAI-AC-3	9.5	0.22	170	ND	0.2	53	3.8	0.028	44	ND	ND	ND
Quench Tower	CAI-QT-1	13	ND	240	ND	0.24	7.9	2.6	0.015	25	ND	ND	ND
Quench Tower	CAI-QT-2	12	ND	260	ND	0.33	5.4	3.2	0.019	10	ND	ND	ND
Quench Tower	CAI-QT-3 ^	107	0.3	200	0.15	6.4	4.6	180	ND	2.9	ND	ND	ND
Exhaust	CAI-EX-1	11	0.24	110	ND	ND	13	2.3	ND	8.1	ND	ND	ND
Exhaust	CAI-EX-2	9.1	ND	130	ND	ND	1.5	0.59	ND	0.6	ND	ND	ND
Exhaust	CAI-EX-3	9	ND	110	ND	ND	1.4	0.51	ND	1.2	ND	ND	ND
Liquid Feed	CAI-LF-1	11	ND	100	ND	ND	0.59	0.25	ND	ND	ND	ND	ND
Liquid Feed	CAI-LF-2	12	ND	140	ND	ND	3.8	0.57	ND	2.1	ND	ND	ND
Liquid Feed	CAI-LF-3	11	ND	130	ND	0.06	2.3	0.77	ND	1	ND	ND	ND
Liquid Feed	CAI-LF-4#	10	ND	98	ND	ND	0.45	0.21	ND	ND	ND	ND	ND
Duplic. of LF-2	CAI-LF-5	13	ND	120	ND	ND	4.7	0.71	ND	2.8	ND	ND	ND
Ash Removal	CAI-AR-1	11.3	0.17	184	0.05	0.1	12.1	4.6	0.08	156	0.36	0.1	0.4
Ash Removal	CAI-AR-2	11.2	0.28	220	0.05	0.1	7.7	2	0.01	4.8	0.33	0.1	0.4
Ash Removal	CAI-AR-3	8.8	0.2	177	0.05	0.07	10.5	2.5	0.01	6.4	0.25	0.1	0.4
Ash Removal	CAI-AR-4	9.1	0.25	191	0.05	0.12	54	7.5	0.01	34	0.25	0.1	0.4
Ash Removal	CAI-AR-5	10.4	0.25	233	0.05	0.05	0.66	0.2	0.01	0.23	0.25	0.1	0.4
Reporting Limits (mg/L)		-	0.1	1	-	0.05	0.1	0.03	0.002	-	0.05	0.1	-
JadePack Brick	CAI-JP-1 (TCLP)	-	ND	ND	-	ND	0.1	ND	ND	-	ND	ND	-

\* Samples in blue shaded area are greater than the Upper Tolerance Limit

\*\* For these two samples, the detection limits were 10X higher than the reporting limits listed.

# Field Blank

^ Swipe of Refractory at end of Hot Duct.