

**APPENDIX E**  
**DEPARTMENT OF ENERGY RESPONSE TO**  
**COMMENTS RECEIVED ON DRAFT EA**

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BENTON COUNTY  
CLEAN AIR AUTHORITY

650 George Washington Way  
Richland WA 99352-4289  
Ph:(509) 943-3396 FAX (509) 943-2232  
E-Mail: bccaa@3-cities.com

27 January 1997

Prent C. Houck, Engineer  
Allied Technology Group, Inc.  
P O BOX 969  
Richland, Washington 99352

RE: NOC 970108, Mixed Waste Plasma Arc at ATG, Request for Comment from Dunigan, NEPA Compliance Officer, U S Dept of Energy

Dear Mr. Houck,

On January 21, I received a letter from Paul F.X. Dunigan, NEPA Compliance Officer, U.S. Dept. of Energy, with four volumes regarding ATG's proposed mixed waste incinerator. He asked for comment within 30 days. Local and State rules require a fee for Notice of Construction review, and submission on a form sent by the air authority. Enclosed is my one page form. With the submission of the NOC form, please include a fee of \$453 for review of the NOC (filing fee of \$50 plus 10 hours of my review time which includes overhead). I would like an incomplete submittal promising answers to the questions I am raising, the form, with the fee, by return mail, in order to respond to Mr. Dunigan's letter by the date he requested, which is February 20th.

My letter of January 7 to you was three and a half pages of comments on your submittal to Washington State Dept. of Ecology. I will not repeat that in this letter.

In the volume titled Environmental Assessment, section 6.1.6 is incorrect and misleading. This Authority is referred to as it was in 1993. The State of Washington, Dept. of Ecology, administers the PSD rule, which is very likely not applicable. If ATG, including the mixed waste facility, exceeds 10 tons per year of chlorine, also unlikely, then it will need a federal Title V Air Operating Permit, which this Authority administers.

The correct sentence in section 6.1.6 is the last: "Compliance with state

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hazardous air pollutant ambient concentration limits also will be addressed as part of the air quality permit process." This hazardous air pollutant rule, WAC 173-460, has three screening steps. First, is the toxic air pollutant released below the small quantity emission rates in the two tables following WAC 173-460-080 (2)(e)? If not, run the T-Screen model, and see if the quantity released exceeds the Acceptable Source Impact Level (ASIL). If it does exceed the ASIL, have Washington State Dept. of Ecology run a more accurate model. In the ISCST3... volume, ATG had a more accurate model run, without allowing Ecology to OK Robert Sculley usurping their perogative, and without comparing the modelling results to the ASIL's in WAC 173-460.

I look forward to your return of the one page form, and the review fee.

If you have questions, do not hesitate to contact me.



Peter B. Bosserman, review engineer

Enclosures: NOC form

CC:

Pat Irle, Dangerous Waste Group  
Ecology Kennewick Office  
1315 W 4th Av  
KENNEWICK WA 99336-6018

John Martell, Engineer  
WA Dept. of Health, Div. of Rad. Protection  
4815 Blue Heron Blvd  
WEST RICHLAND WA 99353

✓ Paul F.X. Dunigan, Jr., NEPA Compliance Officer  
U.S.Dept. of Energy  
Richland Operations Office  
P O BOX 550  
RICHLAND WA 99352

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BENTON COUNTY  
CLEAN AIR AUTHORITY

650 George Washington Way  
Richland WA 99352-4289  
Ph:(509) 943-3396 FAX (509) 943-2232

Date: \_\_\_\_\_

Notice of Construction and Application for Approval *NOC 970108*

**I. OWNER**

Name: \_\_\_\_\_  
Contact Person: \_\_\_\_\_ Phone \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
\_\_\_\_\_

**II. LOCATION**

Type of Facility and Source of Pollution: *Mixed Waste processing using a plasma arc, exhaust will have scrubber, HEPA filter, carbon absorber*  
Address of Facility: \_\_\_\_\_  
Directions to Drive to Facility: \_\_\_\_\_  
\_\_\_\_\_

~~III. Attached forms to be filled out:~~ *Dept. of Ecology submitted including Vol. 111-A revised 2 Dec. 1996, Dept. of Ecology EA-1135 draft rec'd 21 Jan. 1997, already submitted; answers to BECAA letters 7 and 27 January 1997 being prepared.*

**IV. Costs and Schedule:**  
Cost of Project: \_\_\_\_\_  
Installation's Est. Start Date \_\_\_\_\_ Est. Completion Date \_\_\_\_\_

**V. Certification:**

I certify that I have filled out this form ~~and the attached forms~~ completely and accurately to the best of my knowledge and my firm's knowledge.

\_\_\_\_\_  
Signed Date

\_\_\_\_\_  
Typed or Printed Name Title of Person Signing

In accordance with Regulation 1 Section 10.06 (A) of this Authority, a filing fee of \$50.00 shall be paid with the filing of this form.



BENTON COUNTY  
CLEAN AIR AUTHORITY

650 George Washington Way  
Richland WA 99352-4289  
Ph:(509) 943-3396 FAX (509) 943-2232

Date: \_\_\_\_\_

Notice of Construction and Application for Approval *NOC 970108*

**I. OWNER**

Name: \_\_\_\_\_  
Contact Person: \_\_\_\_\_ Phone \_\_\_\_\_  
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\_\_\_\_\_  
Signed Date

\_\_\_\_\_  
Typed or Printed Name Title of Person Signing

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APR 21 1999

Mr. Peter B. Bosserman  
99-WPD-216

-2-

A copy of the final EA will be provided for your information. If you have any questions, or need additional information about the proposed action, please contact Anna V. Beard, the NEPA Document Manager, on (509) 376-7472. Questions concerning the NEPA process may be directed to me on (509) 376-6667.

Sincerely,



Paul F. X. Dunigan, Jr.  
NEPA Compliance Officer

WPD:AVB

cc: R. Feizollahi, ATG  
K. Salmon, ATG  
C. Stephen, ATG  
D. E. Nesten, WMH

324 Gulf Court  
Richland, WA 99352  
February 19, 1997

Mr. Paul Dunigan  
NEPA Compliance Officer  
Department of Energy  
P.O. Box 550, Mailstop A5-15  
Richland, WA 99352

RE: DOE/EA-1135, Low Level Waste Treatment

Dear Mr. Dunigan:

The stated purpose and need is to treat contact-handled low-level mixed waste (LLMW) containing polychlorinated biphenyl (PCBs) and other organics, to meet regulatory standards.

The proposed action is to construct a thermal treatment facility in the city of Richland. The City of Richland Planning Departments records indicate the proposed facility would be a [non-thermal] solidification facility. The SEPA checklist submitted to the City does not list this as a thermal facility.

A logical alternative to the proposed action would be to locate a facility of this nature on the Hanford Site. Preferably close the source of the low-level waste material and its eventual disposal location; in other words the 200 Area.

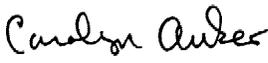
Section 3.2.2 identifies an alternative "Build a thermal treatment facility at the Hanford Site 200 West Area." This alternative is discounted in the EA because of the estimated cost of \$620 million. However, the \$620 million facility would be capable of treating "contact-handled LLMW, remote-handled transuranic waste." In other words materials that would greatly complicate safety and environmental control requirements. This alternative needs to be reexamined.

It appears logical that the construction and operation of this facility would be less if transport costs and risks were minimized. This could be accomplished on land in the 200 Area leased to ATG.

Note that DOE NEPA regulations normally require an EIS for "Siting, construction, and operation of incinerators, other than research and development incinerators ...." Please provide information why an EIS would not be required in this situation.

Also, please note that one of the nearest downwind receptors of the atmospheric effluent from this facility would be a day care center.

Sincerely,

  
Carolyn Auker

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**Department of Energy**  
Richland Operations Office  
P.O. Box 550  
Richland, Washington 99352

**MAY 0 5 1997**

97-SWT-086

Ms. Carolyn Auker  
324 Gulf Court  
Richland, Washington 99352

Dear Ms. Auker:

DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR OFFSITE THERMAL TREATMENT OF LOW-LEVEL MIXED WASTE (LLMW)

Thank you for commenting on the Draft EA for Offsite Thermal Treatment of LLMW. The following paragraphs respond to your comments:

The proposed action is not to construct a thermal treatment facility in the city of Richland as your letter states, but rather to transport up to 5,120 cubic meters of contact-handled LLMW from the Hanford Site to the Allied Technology Group (ATG) gasification and vitrification (GASVIT) building in Richland for treatment, and return the treated waste to the Hanford Site for disposal. Construction of the thermal treatment facility is outside of the scope of the subject EA, and will be addressed in the Environmental Impact Statement (EIS) that will be prepared by ATG for the City of Richland under the State Environmental Policy Act (SEPA).

Your comment correctly notes that the State of Washington Environmental Policy Act (SEPA) checklist filed with the City of Richland Planning Department applies only to ATG's proposed non-thermal treatment systems. The SEPA checklist for the proposed non-thermal treatment systems was submitted in March 1996 with the Part B Dangerous Waste permit application. The Part B permit application was supplemented in December 1996 to include two GASVIT thermal systems. Together, the non-thermal systems and the GASVIT systems comprise ATG's proposed LLMW Facility.

Locating a Department of Energy (DOE) owned thermal treatment facility on site was examined in the subject EA as an alternative. It was discounted because of the high estimated capital cost and declining capital funds available for new DOE facilities. It is noted that this onsite DOE facility would have treated additional waste such as transuranic and remote-handled waste, so a direct cost comparison cannot be made between the proposed DOE facility and the contract to treat LLMW with ATG. However, a large sum of capital funds would still be required if a DOE facility to treat only LLMW was constructed on site. The volume of Hanford LLMW that requires thermal treatment is not sufficient to justify construction of a DOE owned facility on the Hanford Site.

Ms. Carolyn Auker  
97-SWT-086

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The contract solicitation was structured such that vendors submitted bids based on building their own facility off the Hanford Site. Leasing of land by DOE to interested bidders was not an option in the contract solicitation. This allowed vendors to utilize their existing infrastructure to the maximum extent practicable, to treat other than Hanford waste if desired, to utilize the economies of scale, and therefore submit the most cost-effective bid. Contractor owned facilities could not be put on DOE land because of the potential liability for DOE that could not be transferred to the contractor. This explanation has been added to Chapter 2 of the EA.

The DOE, Richland Operations Office (RL) agrees that DOE National Environmental Policy Act regulations normally require an EIS for "Siting, construction, and operation of incinerators, other than research and development incinerators..." as stated in your letter. However, construction of the proposed thermal treatment facility is not within the scope of DOE's proposed action, as mentioned in paragraph two of this letter. ATG will prepare an EIS for the City of Richland under SEPA for construction of the proposed thermal treatment facility. It should also be noted that the proposed ATG thermal treatment facility is not being permitted as an incinerator, but as a "miscellaneous unit."

ATG's facility is located west of Hanford's 1100 Area within an area designated by the City of Richland as an industrial park for nuclear and non-nuclear industrial plants. Some of the nearest receptors of the atmospheric effluent from the GASVIT systems include a recently established Child Care Facility within North Richland, as shown in Figure 2-1 of the subject EA. The EA documents that risks presented by processing of DOE waste in ATG's GASVIT systems to the maximum exposed individual, and thus to these receptors, will be extremely low. Risks potentially posed by the GASVIT systems are extremely low for several reasons. These reasons, described in the EA, are outlined below:

- Screening-level radiological and chemical risk assessments included in the EA indicate the design of the GASVIT system is more than adequate to maintain risks at extremely low levels for the maximum exposed individual at or near the ATG site, either during normal operations or in the event of an accident.
- Similarly, an analysis of transportation risks indicate risks to the public posed by either routine transport or by an accident during transport are extremely low. The proposed transportation route is largely (95%) within the Hanford Site boundaries, and is subject to access control.
- The proprietary GASVIT system will generate fewer toxic emissions than conventional thermal treatment facilities processing an equal amount of waste.

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Ms. Carolyn Auker  
97-SWT-086

-3-

- The emissions control system downstream of the process chamber (refer to Fig 2-4 of EA) is extensive and uses Best Available Control Technology. It includes a scrubber located between the process chamber and the syngas converter to remove halogens that might otherwise form acids and toxic compounds in the syngas converter, a prefilter, High Efficiency Particulate Filters, and carbon filters, which are located downstream of the syngas converter.
- The ATG facility will operate under permits from the State of Washington, Department of Health and Department of Ecology, which will require that all emissions be kept at safe levels.

Please direct any questions about this proposed action to Mr. Joe Waring, the NEPA Document Manager, on (509) 373-7687. Questions about the NEPA process may be directed to me on (509) 376-6667.

Sincerely,



Paul F. X. Dunigan, Jr.  
NEPA Compliance Officer

WPD:JJW

cc: T. L. Baker, RFSH  
F. Feizollahi, ATG  
R. L. Martinez, EM-38. HQ

324 Gulf Court  
Richland, WA 99352  
April 14, 1998

Mr. Paul Dunigan  
NEPA Compliance Officer  
U.S. Department of Energy  
P.O. Box 550  
Richland, Washington

Regarding: ATG Draft EA-1135

Dear Mr. Dunigan:

This letter is an additional comment on the ATG facility proposed for treatment of Hanford Site low level mixed waste.

In earlier correspondence I proposed that a reasonable alternative would be to construct the facility on the Hanford site, near the source of the waste, and away from the City of Richland. In your reply you indicated that this alternative was considered and rejected because of cost.

This left me a little bewildered because I did not understand how the same project would cost more to construct it on DOE owned lands (leased to ATG at a nominal fee). There seemed to imply that construction cost on federal lands would be more costly because of bureaucratic inefficiency. An alternative that ran through my mind was that the project would be more costly because the health and safety measures would be more stringent. That was an intriguing possibility -- that health and safety standards for a facility would be more stringent at a location further removed from a population center. Well this has preyed on my mind for some time so I went to the DOE Hanford Web page to check how this issue was presented.

What I discovered was that the on Hanford Site alternative was not the same as the off Hanford Site alternatives. The Hanford Site facility used in this comparison was a "rotary kiln incinerator," not a melter. The rotary kiln would be able to treat "contact handled transuranic waste, remote handled LLMW, remote-handled transuranic mixed waste" in addition to the LLMW identified in the purpose and need.

The intent of CEQ and DOE regulations and guidance is most certainly to consider and compare alternatives that achieve the same purpose and need. In other words DOE should include a comparison of the costs, impacts, and health effects of constructing the proposed ATG facility in the vicinity of the LLMW rather than within the city limits of Richland. Following is a table contrasting the two alternatives in the EA:

**RECEIVED**  
APR 17 1998  
DOE-RI / RIGC

	Proposed Action - ATG Facility - Richland	Hanford Site Alternative
Treatment Process	Gasification and vitrification	Rotary kiln incinerator
Materials Treated	Contact handled LLMW	Contact handled TRU mixed waste Remote handled LLMW Remote handled TRU mixed waste Contact handled LLMW

Based on this comparison, the EA did not fairly compare siting alternatives; an issue I identified in my earlier letter. The final EA needs to be revised to adequately and fairly consider the alternative of constructing and operating the proposed gasification and vitrification facility on land in the 200 Area.

Sincerely,



Carolyn Auker



**Department of Energy**  
Richland Operations Office  
P.O. Box 550  
Richland, Washington 99352

98-WPD-124

JUL 7 1998

Ms. Carolyn Auker  
324 Gulf Court  
Richland, Washington 99352

Dear Ms. Auker:

**DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR OFFSITE THERMAL TREATMENT OF LOW-LEVEL MIXED WASTE (LLMW)**

Thank you for your letter, dated April 14, 1998, providing additional comments on the Draft EA for Offsite Thermal Treatment of LLMW. The following paragraphs provide a detailed response to your most recent comments and concerns:

You are correct in stating the onsite Hanford alternative was not the same as the offsite alternatives. This was noted in my response letter, dated May 5, 1997, to your original February 19, 1997, comments. As stated in the subject EA, building a Thermal Treatment Facility (a rotary kiln incinerator) on the Hanford Site 200 West Area was proposed by a 1993 Engineering Study. It was not pursued due to high capital cost required for construction and the desire to investigate commercial treatment options to reduce the financial burden to the Government. Your concern that the onsite project would be more costly because the health and safety measures may be more stringent than the offsite facility should be allayed. Both an onsite facility and an offsite facility would require Resource Conservation and Recovery Act, Toxic Substances Control Act, and Clean Air Act permitting from the State of Washington and the U.S. Environmental Protection Agency. Additionally, the Allied Technology Group (ATG) Gasification and Vitrification Facility will operate under a Nuclear Regulatory Commission agreement state radioactive material license from the Washington State Department of Health.

The thermal treatment contract solicitation was structured such that vendors submitted bids based on building their own facility off the Hanford Site. Siting of their facility on the Hanford Site was not an option in the contract solicitation. This allowed a vendor to construct a facility that could treat other LLMW in addition to Hanford LLMW and thereby use the economies of scale to submit a cost-effective bid. Under this commercial contract, DOE is obligated to pay for waste treatment on a per unit basis, and the vendor, ATG, is responsible for all facility siting, construction, permitting, maintenance, and decommissioning.

Including a comparison of the costs, impacts, and health effects of constructing the proposed ATG Facility on the Hanford Site rather than within the city limits of Richland is not within the purpose and scope of this EA. In considering and comparing alternatives that achieve the same purpose and need, DOE has compared several commercial vendors' proposals which could have received Hanford LLMW for treatment in addition to other customers' waste. The scope of

the EA bounds offsite commercial thermal treatment of Hanford waste, which only includes transportation, waste handling, and treatment of Hanford waste at a permitted facility. The City of Richland has prepared a State of Washington Environmental Policy Act (SEPA) Environmental Impact Statement (EIS) on the siting, construction, and operation of the ATG Facility to treat a variety of LLMW, including Hanford's.

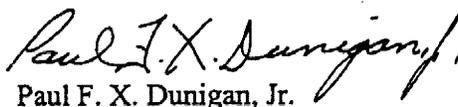
Your last comment states that the final EA needs to be revised to adequately and fairly consider the alternative of constructing and operating the proposed gasification and vitrification facility on land in the 200 Area. As addressed earlier in this response letter, that analysis is outside of the scope of this EA. Through the Hanford LLMW contract solicitation, the purpose was to select a commercial facility for waste treatment so that once constructed or modified, the Hanford Site would be one of its customers. Siting of the facility was to be off the Hanford Site per the contract solicitation. We are making minor changes to the EA to explain this point better.

ATG's process selected for treating DOE's contact-handled LLMW is a technology that has been adopted for commercial application after several years of development at Massachusetts Institute of Technology and Pacific Northwest National Laboratory. The technology has been licensed to a local firm, Integrated Environmental Technologies, LLC, (IET).

The system was selected by ATG because of several inherent environmentally desirable features. These features minimize risk to the public by minimizing emissions while producing a waste form that is highly stable. The waste form also resists the leaching of hazardous constituents into the environment. A prototype version of the system is available for inspection at IET's facility in Richland, Washington. If you are interested in a site visit, please contact Kevin Salmon, ATG, on (509) 375-5160.

DOE and ATG would be happy to meet with you, if you so desire, to further discuss the above responses to your comments. You may call me on 376-6667, or you may call Joe Waring, Waste Programs Division, on 373-7687, to schedule a meeting within two weeks from the date of this letter.

Sincerely,



Paul F. X. Dunigan, Jr.  
NEPA Compliance Officer

WPD:JJW

cc: F. Feizollahi, ATG  
K. Salmon, ATG  
T. L. Baker, WMH

JEFFREY R. MARKILLIE, REM  
552 HOLLY STREET  
RICHLAND, WA 99352

February 19, 1997

Mr. Paul F. Dunigan  
NEPA Compliance Officer  
U.S. Department of Energy  
PO Box 550, MSIN: A5-15  
Richland, WA 99352

Re: DOE/EA-1135, *Offsite Thermal Treatment of Low-Level Mixed Waste*

Dear Mr. Dunigan:

A significant disconnect exists between the proposed action identified in this environmental assessment (thermal treatment of low-level mixed waste) and the action presented in the SEPA checklist submitted to the City of Richland (stabilization and abrasive blasting of waste). It is unclear why such a disconnect exists, and raises ethical questions as to how the project has been presented to the City.

Federal air rules require destruction efficiencies of some hazardous and toxic contaminants that approach 99.9999% (a.k.a. "six nines destruction efficiency"). It is not clear if the proposed process is capable of achieving this level of performance. Additionally, it is not clear how destruction testing would be undertaken before operations are commenced at the facility.

One alternative not analyzed in detail involves treatment of wastes in the 200 Area. The highly industrialized 200 Area Plateau provides an excellent location for treatment activities due to the close proximity of the wastes to be treated, and the heavy industrial infrastructure that already exists. ATG could be leased land by DOE to undertake these endeavors. Although a \$620 million incinerator facility was proposed for the 200 Area some four years ago, DOE should analyze the construction and operation of the scaled-back version of the incinerator being presented in the environmental assessment.

Although not specifically mentioned in the analysis, the closest downwind population to the proposed facility is a day care center, followed by the residential north Richland community. It is unclear why DOE would support the construction and operation of a thermal waste treatment facility less than 1 kilometer from such areas.

Thank you for the opportunity to comment on this environmental assessment; I am looking forward to your response.

Sincerely,



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RMIC



**Department of Energy**  
Richland Operations Office  
P.O. Box 550  
Richland, Washington 99352

**MAY 05 1997**

97-SWT-089

Mr. Jeffrey R. Markillie  
552 Holly Street  
Richland, Washington 99352

Dear Mr. Markillie:

DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR OFFSITE THERMAL TREATMENT OF LOW-LEVEL MIXED WASTE (LLMW)

Thank you for commenting on the Draft EA for Offsite Thermal Treatment of LLMW. The following paragraphs respond to your comments:

The proposed action is not to construct a thermal treatment facility in the city of Richland as your letter states, but rather to transport up to 5,120 cubic meters of contact-handled LLMW from the Hanford Site to the Allied Technology Group (ATG) gasification and vitrification (GASVIT) building in Richland for treatment, and return the treated waste to the Hanford Site for disposal. Construction of the thermal treatment facility is outside of the scope of the subject EA, and will be addressed in the Environmental Impact Statement (EIS) that will be prepared by ATG for the City of Richland under the State Environmental Policy Act (SEPA).

Your comment correctly notes that the State of Washington Environmental Policy Act (SEPA) checklist filed with the City of Richland Planning Department applies only to Allied Technology Group's (ATG) proposed non-thermal treatment systems. The SEPA checklist for the proposed non-thermal treatment systems was submitted in March 1996 with the Part B Dangerous Waste permit application. The Part B permit application was supplemented in December 1996 to include two gasification and vitrification (GASVIT) thermal systems. Together, the non-thermal systems and the GASVIT systems comprise ATG's proposed LLMW Facility.

A GASVIT system is not an incinerator and will not have the impacts normally associated with incinerators. During the demonstration test described in the Addendum to the Part B Application submitted in December 1996, ATG will demonstrate that a GASVIT system, a flameless plasma arc process, meets or exceeds all standards imposed on an incinerator. Additionally, as a flameless unit, a GASVIT system offers very real advantages over incinerators. These advantages include nearly complete elimination of toxic pollutants and significant reductions in sulfur oxide and nitrogen oxide emissions. ATG has described in detail the differences between a GASVIT system and an incinerator in their letter of application for permitting GASVIT systems as Miscellaneous Treatment Units. A copy of this letter, dated December 12, 1995, from

MAY 05 1997

Mr. Jeffrey R. Markillie  
97-SWT-089

-2-

Mr. Fred Feizollahi, ATG, to Ms. Pat Irle, Washington State Department of Ecology, is attached.

Locating a Department of Energy (DOE) owned thermal treatment facility on site was examined in the subject EA as an alternative. It was discounted because of the high estimated capital cost and declining capital funds available for new DOE facilities. It is noted that this onsite DOE facility would have treated additional waste such as transuranic and remote-handled waste, so a direct cost comparison cannot be made between the proposed DOE facility and the contract to treat LLMW with ATG. However, a large sum of capital funds would still be required if a DOE facility to treat only LLMW was constructed on site. The volume of Hanford LLMW that requires thermal treatment is not sufficient to justify construction of a DOE owned facility on the Hanford Site.

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ATG's facility is located west of Hanford's 1100 Area within an area designated by the City of Richland as an industrial park for nuclear and non-nuclear industrial plants. Some of the nearest receptors of the atmospheric effluent from the GASVIT systems include a recently established Child Care Facility within North Richland, as shown in Figure 2-1 of the subject EA. The EA documents that risks presented by processing of DOE waste in ATG's GASVIT systems to the maximum exposed individual, and thus to these receptors, will be extremely low. Risks potentially posed by the GASVIT systems are extremely low for several reasons. These reasons, described in the EA, are outlined below:

- Screening-level radiological and chemical risk assessments included in the EA indicate the design of the GASVIT system is more than adequate to maintain risks at extremely low levels for the maximum exposed individual at or near the ATG site, either during normal operations or in the event of an accident.
- Similarly, an analysis of transportation risks indicate risks to the public posed by either routine transport or by an accident during transport are extremely low. This proposed transportation route is largely (95%) within the Hanford Site boundaries, and is subject to access control.

MAY 05 1997

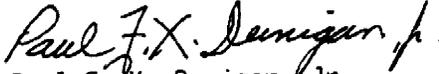
Mr. Jeffrey R. Markillie  
97-SWT-089

-3-

- The proprietary GASVIT system will generate fewer toxic emissions than conventional thermal treatment facilities processing an equal amount of waste.
- The emissions control system downstream of the process chamber (refer to Fig 2-4 of EA) is extensive and uses Best Available Control Technology. It includes a scrubber located between the process chamber and the syngas converter to remove halogens that might otherwise form acids and toxic compounds in the syngas converter, a prefilter, High Efficiency Particulate Filters, and carbon filters, which are located downstream of the syngas converter.
- The ATG facility will operate under permits from the State of Washington, Department of Health and Department of Ecology, which will require that all emissions be kept at safe levels.

Please direct any questions about this proposed action to Mr. Joe Waring, the NEPA Document Manager, on (509) 373-7687. Questions about the NEPA process may be directed to me on (509) 376-6667.

Sincerely,

  
Paul F. X. Dunigan, Jr.  
NEPA Compliance Officer

WPD:JJW

Attachment

cc w/o attach:  
T. L. Baker, RFSH  
F. Feizollahi, ATG  
R. L. Martinez, EM-38, HQ



**Department of Energy**  
Richland Operations Office  
P.O. Box 550  
Richland, Washington 99352

**APR 21 1999**

99-WPD-217

Mr. Jeffery R. Markillie  
552 Holly Street  
Richland, Washington 99352

Dear Mr. Markillie:

THE U.S. DEPARTMENT OF ENERGY (DOE), RICHLAND OPERATIONS OFFICE (RL)  
DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR OFFSITE THERMAL TREATMENT  
OF LOW-LEVEL MIXED WASTE (LLMW)

- References:
- (1) RL letter to Jeffery R. Markillie, from P. F. X. Dunigan, RL, same subject as above, (letter number 97-SWT-089), dated May 5, 1997.
  - (2) Letter from Jeffery R. Markillie, to P. F. Dunigan, RL, same subject as above, dated February 19, 1997.

In my letter to you (see Reference [1]) I stated that the EA would include an explanation of why the Allied Technology Group (ATG) Facility is not located within the Hanford Site. Since then the EA has undergone several iterations reflecting additional public comments, discussions about siting, the City of Richland's State Environmental Policy Act Environmental Impact Statement on the ATG Facility, and DOE's original intent in considering this proposed action.

Through this process we have clarified the purpose and need for the proposed action to read: "The DOE, RL needs to demonstrate the feasibility of offsite commercial treatment of contact-handled LLMW containing polychlorinated biphenyls, and other organics to meet existing regulatory standards for eventual disposal." In addition, a broader discussion of siting has been added to Chapter 2.

A copy of the final EA will be provided to you for your information.

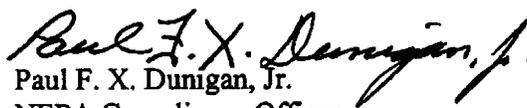
APR 21 1999

Mr. Jeffery R. Markillie  
99-WPD-217

-2-

RL would like to thank you again for commenting on the Draft EA. If you have any questions concerning the proposed action, please contact Anna V. Beard, National Environmental Policy Act of 1969 (NEPA) Document Manager, on (509) 376-7472. Please direct questions concerning the NEPA process to me on (509) 376-6667.

Sincerely,

  
Paul F. X. Dunigan, Jr.  
NEPA Compliance Officer

WPD:AVB

cc: C. Stephen, ATG  
R. L. Martinez, EM-38, HQ  
R. R. Connolly, WMH  
M. L. Estes, WMH  
D. E. Nester, WMH

## Hiskes, Edward V

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From: bobcook@mail.tcfn.org  
Sent: Tuesday, April 21, 1998 10:16 AM  
To: edward\_v\_hiskes@rl.gov  
Subject: ATG MIXED WASTE RICHLAND INCINERATOR

Issues and comments on the DOE EA

1. The EA does not address disposition of the volatile radioactive materials that are found in low level mixed wastes such as tritium, carbon-14 and Iodine-129. Impacts of the disposition of such wastes should be addressed in the EA. The ATG unit to my knowledge has no planned treatment to recover the C-14, the tritium or the I-129.

(Depending upon the iodine species, activated carbon may not be effective.) These radioactive substances appear are intended to be released to the environment. In fact the description of the process indicates that carbon dioxide and steam will be released. Although not stated in the system description provided in the EA it would appear that the addition of steam could be used to dilute the tritium in the wastes before discharge. This would not be an acceptable treatment scheme for the tritium. As to the C-14 the planned release of CO<sub>2</sub> would include the C-14. This would also be unacceptable. Potential dilution of the contaminants as an incidental aspect of the process should be addressed as well as deliberate dilution, if it is planned.

2. The EA description of the organic waste stream does not include oxygen. The free oxygen that would be produced by the plasma arc would react or "combust" with the gaseous waste stream in a controlled manner depending upon the oxygen present. The CO<sub>2</sub> would be the major combustion product as noted in the system description. The definition of a "Plasma Arc Incinerator" in the Washington State Dangerous Waste Reg's is as follows:

" Plasma Arc Incinerator means any enclose device using a high intensity electrical discharge or arc as a source of heat followed by an afterburner using controlled flame combustion and which is not listed as an industrial furnace."

The chamber where the recombination of carbon and oxygen combust would constitute the "afterburner" in this context. Afterburner is not a defined term in the regulations. The combustion must be controlled to assure violent explosive recombination does not occur in the hot gaseous waste stream. The only time combustion would not be a concern is if oxygen were not a component of the waste stream.

This context is entirely inconsistent with the DOE discussion which would lead on to believe there is no oxygen involved in the process reaction.

3. The credible accidents do not appear to address a fire at the facility that would effect the inventory of mixed wastes including any explosive or organic wastes in inventory. A worst case facility fire in which the maximum inventory of wastes on hand would be dispersed by the fire should be assessed in the EA. The SEPA should have also looked at this accident. The mere consideration of air borne releases from vitrified waste product is inadequate. Secondary containment much like that necessary for a commercial reactor may be necessary in order to reduce the risk of fire at an urban site. Remote sites where geographic isolation serves as a secondary protective barrier should reduce facility costs significantly and economically favor such a remote site.

4. HEPA filters are known to have a reduced efficiency for particles of a certain size in the range of 0.1 micron to 1.0 micron. The production of particulate wastes as a function of their size should be identified and their impacts for normal operations considered.

5. Alternate siting of the facility away from a populated area should be considered.

6. Since the City of Richland has an objective of promoting industrial operations within the City boundaries, they have a conflict of interest in providing an unbiased SEPA. The Department of Health having responsibility for the radioactive waste should be a joint preparer of the SEPA and responsible for the decision regarding siting. The City of Richland lands do not provide an alternative remote site away from any population center. A site near the 200 area at Hanford would substantially reduce the health risk to the population associated with routine operations as well as worst case accident. Such a site would substantially reduce the cost of transportation and risk of traffic accidents associated with the DOE wastes alone.

It appears in fact that the City has tried to hide the facility from public scrutiny. The lack of public comments and participation is apparent. There was no credible effort to involve the public. I do not consider the Newspaper add was a credible effort considering the innocuous description of the facility and the lack of public response.

7. The DOE revised EA should be made public on the internet with the request for comments. Effective advertisement should be accomplished. Specific letters to the two child care centers and the Hanford PTA notifying them of the nature and proximity of the proposed facility should be prepared to alert potentially interested public. Comments from the Hanford Advisory Board should be requested.

8. DOE should assure an appropriate oversight entity for nuclear material is responsible for preparation of an alternative siting evaluation, since a large fraction of the DOE wastes are intended to be processed at the ATG facility. Potential future liability for a site in Richland not now contaminated should weigh heavily in favor of an industrial site already contaminated such as in the 200 area. DOE would not be prudent to advocate an urban site such as the one proposed in the City when considering potential future liability. The entity responsible for licensing should not be a consideration when considering this future liability.

A meeting with other commenters, Dunnigan, and the City, WDOE and WDOH is warranted. This may be more than you had in mind, but this is what I would recommend.

Bob Cook



**Department of Energy**  
Richland Operations Office  
P.O. Box 550  
Richland, Washington 99352

98-WPD-200

JUL 17 1998

Mr. F. R. Cook  
2552 Harris Avenue  
Richland, Washington 99352

Dear Mr. Cook:

**DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR OFFSITE THERMAL TREATMENT OF  
LOW-LEVEL MIXED WASTE (LLMW)**

Mr. Edward Hiskes received your e-mail on April 21, 1998, regarding your issues and comments on the subject EA. The following paragraphs provide a detailed response to your comments.

**Comment:** The EA does not address disposition of the volatile radioactive materials that are found in LLMW such as tritium, carbon-14, and iodine-129. Impacts of the disposition of such wastes should be addressed in the EA.

**Response:** The EA has addressed the disposition of the volatile radioactive materials that are found in U.S. Department of Energy's (DOE) contact-handled (CH) LLMW, including materials such as tritium, carbon-14 and iodine-129. Firstly, it should be noted that only DOE's CH-LLMW is being evaluated for processing at Allied Technology Group's (ATG) site. Secondly, the three radionuclides referred to in the comment have very low average concentrations in the DOE's CH-LLMW<sup>1</sup>. Thirdly, recognizing the difficulties with the treatment of the volatile radionuclides, the analysis of the gasification/vitrification (GASVIT) effluents have used a highly conservative removal factor and the results, presented in Section 5.2.6 of the EA, show that the total dose to the public during 10 years of normal facility operations is 0.02 percent of the U.S. Environmental Protection Agency (EPA) regulatory limit of 10 mrem per year. As indicated, the volatile nuclide tritium, was the largest contributor to this permissible dose.

The volatile radioactive materials were also included in the accident scenario. The description of the accident scenario in Section 5.2.7 includes the statement that "Iodine, tritium, carbon, and sulfur are assumed to be released as gases."

**Comment:** The ATG unit to my knowledge has no planned treatment to recover the carbon-14, tritium, or the iodine-129. (Depending upon the iodine species, activated carbon may not be effective). These radioactive substances appear are intended to be released to the environment. In fact, the description of the process indicates that carbon dioxide and steam will be released.

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<sup>1</sup> Based on the total waste inventory of 265,590 kg, the average curie content for carbon-14 is 0.226 nanocuries per gram, iodine-129 is 0.045 nanocuries per gram, and tritium is 15.8 nanocuries per gram. For comparison, the U.S. DOT defines radioactive material at greater than 2 nanocuries per gram (49 CFR 173.403.)

Response: The proposed method would treat all of the waste. As indicated above, the EA has taken into account the difficulties associated with recovering volatile radionuclides and the analysis has assumed a highly conservative release fraction for the volatile radionuclides including carbon-14, iodine-129, and tritium.

During normal operations, the EA assumes that 10 percent of the carbon-14 is released, 100 percent of the tritium is released, and 0.25 percent of the iodine species are released. Release fractions for these and other radionuclides are listed in Table 1 of the Radiological Dose and Risk Assessment for ATG Gasification and Vitrification Building that accompanied the EA.

The fate of tritium introduced into the process chamber with the waste is difficult to predict. Tritium acts similar to hydrogen in water or other compounds entering the chamber and may participate in many competing reactions and exit as gaseous hydrogen molecule, as an acid gas such as hydrogen chloride, or as water. Consequently, the risk assessment analysis conservatively assumes that all tritium introduced with the waste would be released even though some of the tritium would actually be recovered as hydrogen chloride and water in the scrubbers when the exhaust gas from the chamber is treated. The treatment of carbon-14 is discussed in the response to comment below.

Iodine would be removed as hydrogen iodide in the scrubbers and also adsorbed in the carbon beds. Recovery efficiencies for iodine in carbon filters were taken from a DOE report by Elders, *et al.* titled "Guide of Radiological Accident Consequences for Siting and Design of DOE Non-Reactor Nuclear Facilities." Analysis of accidents at the facility assumes zero credit for removal of tritium and carbon-14, and 50 percent plate-out for iodine-129.

Comment: Although not stated in the system description provided in the EA, it would appear that the addition of steam could be used to dilute tritium in the waste before it is discharged. This would not be an acceptable treatment scheme for the tritium.

Response: The process would not use steam or other gases for the purpose of diluting tritium. Steam would be added for steam reformation of carbonaceous material. Water (or steam) would also be used for cooling and scrubbing the contaminants from the gaseous streams.

For the purpose of assessing risks in the EA, as explained in a previous response, it is not assumed that any of the tritium would be treated. The EA has shown in Section 5.2.6 that risks from operating the facility as designed would be very low.

Comment: As to the C-14, the planned release of CO<sub>2</sub> would include C-14. This would also be unacceptable.

Response: Much of the carbon -14 would be removed as carbonates in the two scrubbers. The system is also capable of removing some of the carbon as carbon black. The analysis of

normal operations in Section 5.2.6, which uses conservative assumptions relative to carbon-14 removal, demonstrates that the total dose from normal operations for the maximally exposed individual (MEI) would be 0.02 percent of the EPA regulatory limit of 10 mrem per year.

**Comment:** Potential dilution of the contaminants as an incidental aspect of the process should be addressed as well as deliberate dilution, if it is planned.

**Response:** No deliberate dilution solely for the purpose of reducing the contaminant concentrations in the gas streams leaving the facility would occur. Besides steam addition to the process chamber, there are several other materials that would be added to the process gas during treatment process. The process description in the EA has been modified to include some of these: a constant stream of nitrogen would flow into the process chamber to keep the process chamber inert and to cool key instrumentation components; water and reagents would be added to the gaseous stream for scrubbing purposes; after cleaning, the process gas would be mixed with air to facilitate a flameless syngas conversion in the converter unit; and, the exhaust gas from the converter would be released to the building exhaust ducts where it would mix with the building ventilation before passing through the HEPA and carbon filters and entering the building stack.

**Comment:** The EA description of the organic waste stream does not include oxygen. The free oxygen that would be produced by the plasma arc would react or "combust" with the gaseous waste stream in a controlled manner depending upon the oxygen present. The CO<sub>2</sub> would be the major combustion product as noted in the system description.

**Response:** Due to a highly reducing environment in the GASVIT process chamber, a flame combustion reaction (a chemical reaction that produces heat and light) would not be possible. The process is categorized as gasification (or steam reforming) in which heat would be added (i.e. endothermic) to force the gasification reaction of the organic material with water. Any oxygen in the waste would reduce the amount of water (steam) that must be used, but the bulk of the oxygen required for reaction of carbon in the waste would be supplied primarily by the added water (steam). In a typical industrial combustion process, the free oxygen in air, not water, is used to produce a flame combustion reaction in which heat is released (i.e. exothermic). The amount of CO<sub>2</sub> present in the GASVIT chamber is a minor constituent, usually less than one or two percent.

The carbon monoxide is converted to CO<sub>2</sub> downstream of the process chamber, after the process gas has been scrubbed of acid gases. The flameless converter that transforms the carbon monoxide to carbon dioxide is described in Section 2.4.2. The conversion occurs entirely within the heat exchange media, within which no flame can form.

**Comment:** The definition of a "plasma arc incinerator" in the Washington State Dangerous Waste Regulations is as follows:

"Plasma Arc Incinerator means any enclosed device using a high intensity electrical discharge or arc as a source of heat followed by an afterburner using controlled flame combustion and which is not listed as an industrial furnace."

The chamber where the recombination of carbon and oxygen combust would constitute the "afterburner" in this context. Afterburner is not a defined term in the regulations. The combustion must be controlled to assure violent explosive recombination does not occur in the hot gaseous waste stream. The only time combustion would not be a concern is if oxygen were not a component of the waste stream.

This context is entirely inconsistent with the DOE discussion, which would lead one to believe there is no oxygen involved in the process reaction.

Response: The process does not use an "afterburner using controlled flame combustion." As noted in the above response, flame combustion in the reducing environment found in the plasma process chamber is theoretically impossible. The above response also clarifies the sources and role of oxygen in the gasification reactions that occur within the process chamber.

Comment: The credible accidents do not appear to address a fire at the facility that would affect the inventory of mixed wastes including any explosive or organic wastes in inventory. A worst case facility fire in which the maximum inventory of wastes on hand would be dispersed by the fire should be assessed in the EA. The SEPA should have also looked at this accident. The mere consideration of air borne releases from vitrified waste product is inadequate.

Response: The accident case considered in the EA document is credible as a worst case scenario. The EA has been revised to reflect that a waste container handling accident has also been evaluated. The consequences of this accident are smaller than the process chamber accident, which is considered worst case.

The scenario suggested in the above comment would not be credible because of the design of the facility. The suggested scenario assumes that the maximum inventory of wastes on hand would be dispersed by a fire. Dispersion of the maximum inventory is not credible because wastes are stored (1) within different buildings; (2) within a building in areas separated by fire walls; (3) in areas protected by fire protection systems, and (4) combustible wastes are stored in steel containers.

Comment: Secondary containment much like that necessary for a commercial reactor may be necessary in order to reduce the risk of fire at an urban site. Remote sites where geographic isolation serves as a secondary protective barrier should reduce facility costs significantly and economically favor such a remote site.

Response: The comparison with a commercial reactor is not justified since the facility would handle only contact-handled low-level radioactive material. A typical commercial reactor would contain highly radioactive material and would have an inventory of radionuclides that is several million times higher than the total inventory allowed by the ATG Facility license.

Additional containment would be provided for all combustible liquids in the process area. Furthermore, these materials would be kept in metal enclosures. The facility would be licensed by the Department of Health and would have all the measures and controls needed to minimize risk to the public during normal and abnormal conditions.

**Comment:** HEPA filters are known to have a reduced efficiency for particles of a certain size in the range of 0.1 micron to 1.0 micron. The production of particulate wastes as a function of their size should be identified and their impacts for normal operation considered.

**Response:** Nearly all of the airborne particulates released from the facility would be smaller than one micron. As required by the licensing agency (the Washington State Department of Health) the HEPA filters would be tested and certified to have a minimum 99.97 percent efficiency for removing particles larger than

0.3 microns. Thus, large particles will be trapped by the HEPA filters, and very small (respirable) particles will be emitted. The analyses of impacts of these emissions assume that emitted particles are of respirable size. The results of these analyses are discussed in Section 5.2.6

**Comment:** Alternate siting of the facility away from a populated area should be considered.

**Response:** Alternate siting of a DOE owned thermal treatment facility on the 200 area of the Hanford Site was considered in a 1993 Engineering Study, prior to considering commercial treatment options. This facility was not pursued due to high capital cost required for construction and the desire to investigate commercial treatment options to reduce the financial burden to the Government. The Request for Proposals contract solicitation, which was issued in 1995, did not allow the commercial vendors to propose siting their treatment facility on the Hanford Site. This allowed vendors to utilize their existing infrastructure to the maximum extent practicable, to treat other than Hanford waste if desired, to utilize the economies of scale, and therefore submit the most cost-effective bid.

**Comment:** Since the City of Richland has an objective of promoting industrial operations within the City boundaries, they have a conflict of interest in providing an unbiased State of Washington Environmental Protection Agency (SEPA). The Department of Health having responsibility for the radioactive waste should be a joint preparer of the SEPA and responsible for the decision regarding siting. The City of Richland lands do not provide an alternative remote site away from any population center. A site near the 200 Area at Hanford would substantially reduce the health risk to the population associated with routine operations as well as worst case accident. Such a site would substantially reduce the cost of transportation and risk of traffic accidents associated with the DOE wastes alone.

**Response:** A site near the 200 Area on the Hanford Site is not available for the purpose of treating non-Hanford waste as ATG proposes to do.

**Comment:** It appears in fact that the city has tried to hide the facility from public scrutiny. The lack of public comments and participation is apparent. There was no credible effort to involve the public. I do not consider the newspaper ad was a credible effort considering the innocuous description of the facility and lack of public response.

**Response:** DOE cannot comment on the SEPA Environmental Impact Statement (EIS) public participation processes since that is not under DOE's purview. However, we note that there were public comment periods announced, and that 99 comments were received from the public and other agencies on the Draft EIS that the city addressed prior to issuing the Final EIS.

On May 29, 1996, Ecology held a public meeting on ATG's Notice of Intent to site a thermal destruction unit at their site in North Richland. Formal comments were received from the public and responses to those comments were addressed in writing by Ecology.

**Comment:** The DOE revised EA should be made public on the Internet with the request for comments. Effective advertisement should be accomplished. Specific letters to the two child care centers and the Hanford PTA notifying them of the nature and proximity of the proposed facility should be prepared to alert potentially interested public. Comments from the Hanford Advisory Board should be requested

**Response:** The Draft EA was made public on the Internet with a request for public comments in 1997. In accordance with standard policy, letters were sent to the Tribes, Oregon Department of Energy, and Washington State Department of Ecology (Ecology), notifying those parties of a determination to prepare the EA. The Draft EA was subsequently sent to these parties and others including the City of Richland for their review and comment. Comments received from members of the public at that time were considered and responded to.

**Comment:** DOE should assure an appropriate oversight entity for nuclear material is responsible for preparation of an alternative siting evaluation, since a large fraction of the DOE wastes are intended to be processed at the ATG facility. Potential future liability for a site in Richland not now contaminated should weigh heavily in favor of an industrial site already contaminated such as the 200 Area. DOE would not be prudent to advocate an urban site such as the one proposed in the City when considering potential future liability. The entity responsible for licensing should not be a consideration when considering this future liability.

**Response:** Like the other two proposers, ATG proposed using their existing site, which is being developed for commercial low-level radioactive mixed waste treatment. ATG is working to obtain the necessary permits from the Washington State Departments of Ecology and Health. Treatment of DOE's waste by ATG is contingent on their ability to obtain those permits.

ATG's process selected for treating DOE's CH-LLMW is a technology that has been adopted for commercial application after several years of development at Massachusetts Institute of Technology and

JUL 17 1999

Mr. F. R. Cook  
98-WPD-200

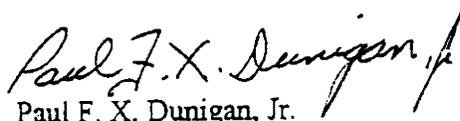
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Pacific Northwest National Laboratory. The technology has been licensed to a local firm, Integrated Environmental Technologies, LLC, (IET).

The system was selected by ATG because of several inherent environmentally desirable features. These features minimize risk to the public by minimizing emissions while producing a waste form that is highly stable. The waste form also resists the leaching of hazardous constituents into the environment. A prototype version of the system is available for inspection at IET's facility in Richland, Washington. If you are interested in a site visit, please contact Kevin Salmon, ATG, on (509) 375-5160.

DOE and ATG would be happy to meet with you, if you so desire, to further discuss the above responses to your comments. You may call me on 376-6667, or you may call Joe Waring, Waste Programs Division, on 373-7687, to schedule a meeting within two weeks from the date of this letter.

Sincerely,



Paul F. X. Dunigan, Jr.  
NEPA Compliance Officer

WPD:JJW

cc: F. Feizollahi, ATG  
K. Salmon, ATG  
T. L. Baker, WMH

## COMMENTS/RESPONSES

### ATG Thermal Treatment Environmental Assessment

**Comment Number: 001**

*F. Robert Cook*

*Comment:* Segmentation. The EA seems to delimit the consideration to ten years of contractual action which seemed to be arbitrary and would be classified as segmenting the actions that should be considered in this mixed waste treatment arena.

*Response:* The purpose and need section (Section 1.0) was revised to state that the proposed action evaluated in this EA is the demonstration of the feasibility of offsite commercial treatment of LLMW and that the proposed action is an interim action under the Hanford Site Solid Waste EIS.

**Comment Number: 002**

*F. Robert Cook*

*Comment:* Alternative Siting. Alternative siting of the mixed waste facility (MWF) in the Hanford Site 200 area should be addressed in the EA.

*Response:* Siting has been addressed in a separate State Environmental Policy Act (SEPA) Environmental Impact Statement (City of Richland 1998).

**Comment Number: 003**

*F. Robert Cook*

*Comment:* Combined Impact with Commercial Facility. DOE contract is the primary incentive for ATG's investment in the privatized facility. Without this contract the facility may not be built. Therefore, DOE's EA must consider the full impact of the commercial wastes as well as DOE wastes to be treated by MWF.

*Response:* As stated on p. 2-1, ATG would proceed with the facility whether or not the Hanford Site LLMW is included. The Hanford Site LLMW will supply only 25% of the capacity of the facility. Therefore, for this EA, only Hanford Site LLMW was analyzed. In addition, the EIS for Treatment of Low-Level Mixed Waste provides the cumulative impacts of this privatized facility processing DOE and non-DOE waste while operating at full capacity.

**Comment Number: 004**

*F. Robert Cook*

*Comment:* Cumulative Impact. The EA section addressing cumulative impacts to be expanded to include:

- Cumulative radiological impacts from various commercial and DOE facilities.
- Cumulative toxicological impact.
- Cumulative impact from unlicensed (DOE) sources.

*Response:* A table was added in Section 5.11 of the EA that presents the cumulative radiological impacts from surrounding commercial facilities, DOE facilities, and unlicensed sources. Cumulative toxicological impacts were not addressed in detail because of the lack of data

available for airborne chemical concentrations. Based on the human health impacts from routine chemical emissions presented in Section 5.2 of the EA, there are no indications that the incremental increase in impacts from chemical emissions associated with thermal treatment of DOE LLMW would cause appreciable change in the surrounding region.

**Comment Number: 005**

*F. Robert Cook*

*Comment:* Accident Analysis. Expand the section on accident analysis to cover the following:

- Analysis of a fire accident involving 64 cubic feet of waste in the process chamber.
- Analysis of a fire accident involving all of the combustible material stored in the thermal processing room, and, if appropriate the covered storage building.
- Analysis of a fire accident involving HEPA and Charcoal filters.
- Evaluate accident scenarios of one chance in a million magnitude.
- Assessment of inventory of total radionuclides in the metal and in the glass.

*Response:* The accident analysis presented in Section 5.1.5 (Transportation) and Section 5.2.7 (Facility Accidents) has been revised to evaluate bounding accidents from among those identified in the comment. A preliminary hazards analysis was completed for the thermal treatment facility and the bounding transportation and facility accident were incorporated into the final EA. In addition to the accidents presented in the EA, additional accident analyses were performed to evaluate a number of accident scenarios. This analysis is documented in Jacobs (1998). The impacts from other accident scenarios were less severe than the bounding accidents presented in the EA.

**Comment Number: 006**

*F. Robert Cook*

*Comment:* Treatment of Carbon-14 and Tritium to Comply with NRC Regulation. Certain NRC regulations require that the applicant must demonstrate that the facility is doing a reasonable effort to minimize the radioactivity contained in the effluents. The NRC regulations 10CFR20.106(B)(1) and 10CFR20.305 are cited as an evidence for this requirement. The issue to be addressed in the EA is that how the facility meets these NRC regulations with respect to carbon-14, and tritium given the fact that the proposed thermal treatment appear to release these two isotopes without a best effort for their treatment. Also, a comment is raised as to the feasibility of scrubbing carbon-14 with lime (i.e., to convert CO<sub>2</sub> in the offgas to carbonate salts).

*Response:* The ATG facility is being permitted as a miscellaneous thermal treatment unit under Washington Administrative Code 173-303-680. As identified in Section 6 of the Draft EA, ATG is required to obtain the major permits and approvals identified in the following table. These licenses require that ATG utilize maximum available control technology and/or best available radionuclide control technology, which will be verified by the responsible agency prior to permit approval.

**Permits Required for ATG Facility**

<b>Permits and Notifications</b>	<b>Permitting Agency</b>
RCRA Part B (e.g., 40 CFR 264)	Washington State Department of Ecology
Toxic Substances Control Act (TSCA) – Treatment of PCBs by Alternative Methods and Notification of PCB Activity	U.S. Environmental Protection Agency
Radiological Air Permit (NESHAP)	Washington State Department of Health
Radiological Permit Update	Washington State Department of Health

In addition to these permits and approvals, the ATG facility must comply with the Nuclear Regulatory Commission regulations, the Washington State Hazardous Waste Management Act, Hanford Site Solid Waste Acceptance Criteria, and other federal, state, and local regulations.

Appropriate off-gas treatment technologies have been considered for the ATG off-gas treatment system. In specific, technologies targeted at removing carbon-14 from the off-gas stream were considered and determined to be infeasible due to the generation of a substantial secondary waste stream that would require further processing and disposal. During vitrification, the carbon-14 would be converted to carbon oxides along with all other nonradioactive carbon in the waste stream. The carbon oxides containing the carbon-14 would make up a small percentage of the total carbon oxides in the off-gas stream. Removal of carbon-14 from the off-gas could be done by scrubbing the off-gas with a lime solution to convert the carbon oxides into carbonate salts. Any treatment technology used to capture the carbon-14 would also have to capture all of the other carbon oxides.

**Comment Number: 007**

*F. Robert Cook*

*Comment:* Transportation Accidents. A worst case accident involving fire should be analyzed. Accidents should consider routing from commercial source.

*Response:* The transportation accident analysis presented in Section 5.1.5 has been revised in the Final EA to include the consequences of an accident involving a fire. Routing of waste from commercial sources is not within the scope of this EA. Potential accidents associated with transporting waste from commercial generators was evaluated in the ATG SEPA EIS (City of Richland 1998).

**Comment Number: 008**

*F. Robert Cook*

*Comment:* Cumulative Impact of Transportation. Address the cumulative impact of transportation.

*Response:* Cumulative transportation impacts from shipping from three cities in Washington state (Seattle, Spokane, and Vancouver) have been provided in the cumulative impacts section (Section 5.11) of the Final EA. These cumulative transportation impacts also include shipment of treated commercial waste to a licensed disposal facility in Clive, Utah. Both incident-free transportation and accident transportation were analyzed and have been provided in the cumulative impact section of the Final EA.

*Comment:* Special Effects of Radiation. The following special effects of radiation should be addressed:

- The accident analysis and normal operations analysis should identify the particulate and aerosol nature of iodine nuclides that are assumed. Effect of particulate exposure of alpha-bearing materials, in particular beta-bearing materials, including the high intensity radiation that is localized on the lung tissues – there is a separate model that applies to this.
- The effect of tritium on egg cells and mutigenic effect on egg cells of individuals, mothers, mothers to-be who have chronic inventory of tritium from water and from the critical amino acids in some plants should be addressed.

*Response:* The impact analysis for routine operations was based on iodine emissions being gaseous and scrubbable in the off-gas treatment system with an overall release fraction of 2.25E-03. The accident analysis was based on a release fraction of 0.15 for iodine. A report addressing special effects of internally incorporated radioactivity was developed in response to this comment (IDIAS 1998). The conclusions of the special effects report include:

- The risk from inhaled insoluble particles of alpha-emitting radionuclides deposited in the lungs is dependent on the activity median aerodynamic diameter (AMAD). As the AMAD of the aerosol increases, the deposition (risk) in the lungs decreases. Hence, the risk is no greater than and in some cases lower from inhaled hot particles than from uniformly distributed activity assumed in the dose modeling.

IDIAS 1998. Review of Special Effects of Internally Incorporated Radioactivity. IDIAS, Inc. Richland, WA. November 1998.

- The risk of a mutagenic effect to the second generation progeny from exposures of females to organically bound tritium cannot be greater than 2.7 times the risk that would occur if the tritium was in water (1993 Health Physics Special Issue).

The special effects report, available for review as a part of the Thermal EA Administrative Record, provides a comprehensive discussion on the radiation health effects identified in the comment. Based on the findings of the referenced report, the radiological health effects were not revised in the EA. The potential increase in risks due to organically bound tritium would be below levels of concern even if the maximum potential increase (2.7 times) were to occur.

*Comment:* Discharge to Sanitary Sewer. Effluents released to sanitary sewer must meet NRC regulations.

*Response:* Text was revised in Section 5.5 of the Final EA to indicate that no liquid effluents would be discharged (released) to the environment, including sanitary sewers.

*Comment:* Compatibility of EA with Risk Assessment. EA and WDOE risk assessment documents should be consistent.

*Response:* A comparison of the EA risk assessment (Leung 1996) and the PRA (ATG 1998a) was made to evaluate the consistency of the two assessments. Because these documents have different purposes, the risk assessment results will be different. The two risk assessments used consistent methodologies within the context of the overall analysis objectives. The Preliminary Risk Assessment is more comprehensive analysis involving multi-pathway exposure assessments to a number of different receptors. The Preliminary Risk Assessment is analyzed at a level of detail that is not warranted in a NEPA document.

*Comment:* Radionuclide Assumptions. Check the following assumptions.

- Ensure that ruthenium, if included in the feed, is considered as a volatile radionuclide.
- What reference was used for assuming 50% of iodine will plate out?

*Response:*

- Ruthenium is identified as present in Hanford Site waste. It is assumed to be in particulate form for both the normal operation scenario and the accident analyses presented in the Draft EA. However, ruthenium is not one of the 10 fission product radionuclides that comprise over 99% of the radioactivity in the waste. The following table shows the estimated inventory of ruthenium and fraction released to the environment in the impact analysis. These data may be found in the following reference (available in the Hanford Reading Rooms):

Leung, D. 1996. Radiological Dose and Risk Assessment for ATG Gasification and Vitrification Building, Richland, Washington. AEA Environmental, Inc. Richland, Washington.

Normal Operations				
Radionuclide	Inventory	Yearly Curies Processed	Release Fraction	Yearly Curies Released to Atmosphere
Ru-106	1.41E-01	8.75E-02	2.50E-08	2.19E-09
Ru-103	1.93E-07	1.20E-07	2.50E-08	3.00E-15
Accident Scenario				
Radionuclide	Inventory	Curies Released to Facility	Release Fraction	Total Curies Released to Atmosphere
Ru-106	1.41E-05	1.79E-05	1.00E-02	1.79E-07
Ru-103	1.93E-07	2.46E-11	1.00E-02	2.46E-13

Note: Ruthenium includes metastable decay product rhodium.

A screening-level risk assessment was performed to determine the dose to receptors if a conservative fraction of the ruthenium present in the waste was released to the environment during routine operations (30 percent) (Goossens, Eicholz, and Tedeer [editors] 1991). The results of this assessment show that releasing 30 percent of the radionuclide does not affect the conclusions of this Environmental Assessment.

- The assumption that 50 percent of the iodine will plate out (i.e., the release fraction is 0.5) is identified in Leung (1996) and may be found in the following reference:

Elder, J., J. Graf, J. Dewart, T. Buhl, W. Wenzel, L. Walker, and A. Stoker. 1986. A Guide to Radiological Accident Considerations for Siting and Design of DOE Nonreactor Nuclear Facilities. LA-10294-MS. Los Alamos National Laboratory, Los Alamos, New Mexico.

**Comment Number: 013**

*F. Robert Cook*

*Comment:* Impact on the City Well Water Ponds. Determine the impact of both routine operations and accidents on the City of Richland well water ponds. Demonstrate that impact does not exceed the NRC/EPA criteria applicable to radiation concentration in the facility effluents.

*Response:* An analysis of the impact of routine radionuclide emissions on the City of Richlands' water well ponds was analyzed in the Preliminary Risk Assessment (ATG 1998a) using airborne deposition rates for radionuclides in the Columbia River as well as the ponds themselves. Isotopes included in the analysis were the primary radionuclides of potential concern, C-14, H-3, and I-129. The calculated concentrations in the water well ponds compared to drinking water standards are as follows:

- H-3 = 1.2E-01 pCi/L (0.0006% of the drinking water standard)
- C-14 = 3.4E-04 pCi/L (0.00002% of the drinking water standard)
- I-129 = 1.2E-03 pCi/L (0.12% of the drinking water standard).

These concentrations result in a potential dose through the drinking water pathway of 3.8E-04 mrem/year (ATG 1998), which is well below all applicable regulatory limits.

**Comment Number: 014**

*F. Robert Cook*

*Comment:* Mercury. Do we have an acceptable design for handling mercury?

*Response:* Confinement systems would be provided to capture fugitive emissions including any mercury vapor or particulates released during operations. Mercury absorbing filters would be provided to remove nearly all mercury from the offgas before being discharged to the stack. Mercury removal units would have an overall removal efficiency greater than 97% for mercury. In the gasification and vitrification unit, this would be accomplished by cooling and scrubbing the offgas, followed by multiple filtration steps. The facility Preliminary Risk Assessment (ATG

1998a), conducted as a part of the RCRA/TSCA permitting process, showed that the design features provided for mercury treatment would reduce risks to a level that is below EPA risk guidelines. Therefore, it is concluded that the ATG Facility has an acceptable design for handling mercury.

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August 26, 1998

The Honorable Slade Gorton  
United States Senator for  
The State of Washington  
Tri-Cities Office  
8915 West Grandridge  
Boulevard, Suite M  
Kennewick, Washington  
99336

The Honorable Patty Murry  
United States Senator for  
The State of Washington  
111 Russell Senate Office Building  
Washington, D.C. 20510

The Honorable Doc Hastings  
U.S. House of Representative for  
The Fourth District, State of Washington  
Tri-Cities Office  
2715 St. Andrews Loop, Suite D  
Pasco, WA 99301

Dear Senators Murry, and Gorton, and Representative Hastings;

Please help stop the insanity! Stop the Department of Energy's radioactive mixed waste from being treated and stored within the City of Richland.

Recently I attended a public meeting conducted by the Washington State Department of Ecology at their Kennewick, Washington offices. The subject of that meeting was a risk assessment for the Allied Technology Group's transportation, treatment and storage of radioactive mixed waste at their Richland, Washington facility. During this meeting it was revealed that the source of the radioactive mixed waste was the Hanford Reservation, and that a majority of the radioactive mixed waste scheduled for treatment and storage in Richland, while currently residing on the Hanford Reservation, was shipped there from a DOE facility at Portsmouth, Ohio. It was also revealed that the technology proposed for the treatment of this DOE radioactive mixed waste has never been implemented beyond a pilot test and that pilot test was on a dis-similar waste stream. While the dangerous waste component of the radioactive mixed waste can be eliminated through treatment, there is no treatment for the radioactive portion of the waste. That portion will remain radioactive long into the future.

Aren't DOE's Hanford missions environmental cleanup, waste management, and the conduct of cleanup-related research? Why in the world would any sane person

deliberately spread radioactive contamination from the relatively geographically expansive and isolated Hanford Reservation into a residential environment? Why would any sane person conduct large scale radioactive cleanup research in a residential environment?

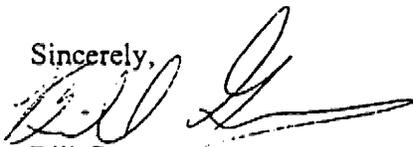
Richland and the entire Tri-City area receive considerable financial benefit from the DOE, and DOE, its predecessors, and the nation received considerable benefit from operations at Hanford. It is recognized that part of the national benefit resulted in what the national press frequently calls "...the most contaminated site in the US." It is also recognized that the DOE cleanup mission will come to a close, leaving the area to grapple for their economic survival with the problem of attracting living-wage jobs. While the frequent national press articles do sell papers and are apparently effective in DOE's budget negotiations with Congress, they locally create an extreme handicap for attracting clean, living-wage jobs.

DOE's exodus from the area is being hastened by their "privatization" concept. Under this concept, DOE is shifting their responsibility for cleanup and compliance with the environmental regulations to private industry. Private industry may indeed be better equipped to recognize that radioactive waste storage tanks with a 20 year design life might start to leak after 30 or 40 years. However, using "privatization" as an excuse for spreading DOE's radioactive waste into the community only continues the cycle of DOE irresponsibility.

The Hanford Reservation is advertised as occupying an area of some 560 square miles. Surely, there is some portion of that 560 square miles that could be used by Allied Technology Group to treat and store DOE's radioactive mixed waste, and commercially prove a new technology. This novel concept (of keeping radioactive waste on the Hanford Reservation) recognizes both the abilities of private industry and DOE, and keeps from spreading DOE's radioactive mixed waste into the City of Richland.

Without your active support, I firmly believe that future generations of Richland residents will have to address the adverse effects of yet another DOE disaster. Please help stop the insanity. Stop the Department of Energy's radioactive mixed waste from being treated and stored within the City of Richland.

Sincerely,



Bill Green  
424 Shoreline Ct.  
Richland, WA 99352

cc: M. Jaraysi, Wa. St. Dept. of Ecology

SLADE GORTON  
WASHINGTON

730 HART SENATE OFFICE BUILDING  
(202) 224-3441

# United States Senate

WASHINGTON, DC 20510-4701

COMMITTEES:  
APPROPRIATIONS  
BUDGET  
COMMERCE, SCIENCE,  
AND TRANSPORTATION  
ENERGY AND NATURAL  
RESOURCES  
INDIAN AFFAIRS

September 1, 1998

Mr. John Wagoner  
Manager  
USDOE-RL  
P.O. Box 550  
Richland, WA 99352

MANAGER'S ACTION \*WPD  
D198165966 MGR  
DUEDATE: 9/17 AMW  
ESH  
OEA  
PAD  
QSH

RE: Mr. Bill Green

Dear Mr. Wagoner,

I have been asked to assist my constituent, Mr. Bill Green, in the matter described in the enclosed correspondence. I am referring this inquiry to you for your consideration.

Please provide the necessary information to the attention of Suzanne Heaston in my Kennewick office, 8915 Grandridge Blvd., Suite M, Kennewick, WA, 99336.

In advance, thank you for your prompt attention to this matter.

Sincerely,



SLADE GORTON  
UNITED STATES SENATOR

SG/smh

**RL COMMITMENT  
CONTROL**

SEP 03 1998

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OPERATIONS OFFICE**

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SPOKANE, WA 99201  
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KENNEWICK, WA 99336  
(509) 783-0840



## Department of Energy

Richland Operations Office  
P.O. Box 550  
Richland, Washington 99352

98-WPD-319

SEP 26 1998

The Honorable Slade Gorton  
United States Senate  
Washington, D. C. 20510

Dear Senator Gorton:

This is in response to your letter of August 26, 1998, which listed concerns raised by your constituent, Bill Green, regarding the use of an Allied Technology Group (ATG) commercial facility for thermal treatment of Hanford Site low-level mixed waste. ATG is constructing a commercial facility located off the Hanford Site with their own capital for the treatment of low-level mixed waste.

Low-level mixed waste treatment is required before disposal under the Resource Conservation and Recovery Act (RCRA), State of Washington Administrative Code-Dangerous Waste Regulations, and Toxic Substances Control Act. Some of Hanford's waste requires thermal treatment under these regulations prior to land disposal of the waste. Following treatment, ATG will return Hanford low-level mixed waste, which will be greatly reduced in volume, to the Hanford Site. Nearly all of the Hanford radioactive mixed waste currently residing at Hanford, and scheduled for treatment at the ATG facility, was generated at Hanford. Only a small portion of the currently scheduled Hanford waste has come from other sources and all future scheduled Hanford waste will be Hanford generated, except as may be authorized by site treatment plans developed as part of the Federal Facilities Compliance Agreement (FFCA). Treatment followed by land disposal would reduce long-term surveillance and maintenance requirements at the Hanford Site.

We understand ATG plans to treat waste from both Hanford and other sources. However, waste from the Hanford Site will be kept separate from other waste streams by treating it in separate campaigns. Likewise, treatment of wastes from other DOE and non-DOE sources will be treated and returned to those sources. We also understand the ATG treatment of the Hanford Site low-level mixed waste would require the use of no more than 25 percent of the facility. Permitting of the facility is underway through the State of Washington Department of Ecology (Ecology). The DOE is not a party to the permit.

ATG currently manages low-level waste at their Richland, Washington facility. They have volume reduction (compaction, thermal, cutting, etc.), decontamination, sorting/consolidation, and decay storage services. With the addition of low-level mixed waste treatment services to ATG's capabilities, only the "hazardous" component of mixed waste is unique. This coincides with Hanford currently sending all their hazardous

SEP 28 1998

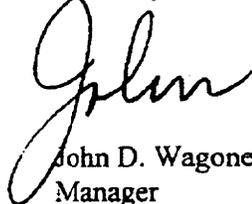
waste offsite for treatment and, as stated above, the treated Hanford radioactive waste will be returned to the Hanford Site and not stored at the ATG facility.

It should be noted that the effects of the overall operation were evaluated under the Washington State Environmental Policy Act by the City of Richland Environmental Impact Statement for Treatment of Low-Level Mixed Waste, February 1998 (City of Richland 1998). ATG can only operate the facility after obtaining permits and approvals from Ecology, Washington State Department of Health, and the U.S. Environmental Protection Agency. The state and other Federal agencies will oversee the ATG plant; DOE provides no regulatory oversight for this facility.

It is also noted that the services DOE will be receiving from ATG for treatment of mixed waste is not a transition of an existing Hanford capability via privatization. It is simply contracting for a needed service that will be available from a local private business. We see this as a very positive feature for both DOE and the local community's economic development. Mr. Green's statement that "...using 'privatization' as an excuse for spreading DOE's radioactive waste into the community..." is inaccurate and misleading.

We hope this information is responsive to your request. If you have any questions, please contact me, or your staff may contact Helen E. Bilson, Waste Programs Division, on (509) 376-1366.

Sincerely,



John D. Wagoner  
Manager

cc: S. Heaston

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