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## COMMENTS

# The Incineration of Chemical Warfare Agents by the United States Army: Is It the Best Method for Disposal?

And he cried with a loud voice . . . saying Do not harm the earth, the sea, or the trees (Revelations 7:3)

### I. Introduction

In 1986 Congress directed the United States Department of Defense and the United States Army to establish a program to destroy the nation's stockpile of deadly chemical weapons by the year 1994.<sup>1</sup> This deadline, however, has been extended to 2004.<sup>2</sup> In addition, the Chemical Weapons Convention (CWC), an international treaty, mandates the destruction of all chemical weapons and facilities within ten years.<sup>3</sup> The United States' chemical weapons stockpile consists of approximately 30,000 tons of chemical agents.<sup>4</sup> The Department of Defense has established that the destruction of this stockpile will cost \$12 billion.<sup>5</sup>

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1. See Department of Defense Authorization Act of 1986, 50 U.S.C. § 1521 (1993).

2. See 50 U.S.C. § 1521 (1993).

3. See Convention on Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction [hereinafter CWC], Jan. 13, 1993, 32 I.L.M. 800.

4. See *Chemical Weapons Working Group, Inc. v. United States Dep't of the Army*, 935 F. Supp. 1206, 1209 (D. Utah 1996).

5. See KENTUCKY ENVIRONMENTAL FOUNDATION, DEVELOPMENT OF ALTERNATIVE TECHNOLOGIES FOR CHEMICAL DEMILITARIZATION: EQUIVOCAL

The Army has determined that incineration is the best process for achieving this requirement.<sup>6</sup> In 1993 it constructed the Tooele Chemical Destruction Facility (TOCDF) at the Tooele Army Depot in Utah. This is the first full-scale chemical weapons incineration facility.<sup>7</sup>

The United States has various federal environmental protection statutes which require strict compliance. The incineration program proposed by the Army is likely to do violence to such statutes. Although, thus far, the Army has complied with the statutes' procedural requirements (i.e. permit acquisition),<sup>8</sup> the substantive requirements will play a major factor in regulating full-scale incineration at Tooele. In addition, a likely conflict exists between the CWC's mandate for destruction and the federal environmental protection statutes. This will result in a clash between an international treaty and federal legislation.

Furthermore, environmental organizations adamantly oppose incineration at Tooele. They allege that incineration will emit chemical agents into the atmosphere and will produce hazardous waste products that will require long-term storage. In May 1996 the Chemical Weapons Working Group, Inc., the Sierra Club and the Vietnam Veterans of America Foundation filed suit in a federal court in Utah seeking to enjoin the Army from using incineration as the means to destroy chemical weapons at Tooele.<sup>9</sup>

The Army must comply with both federal environmental protection statutes regulating incineration and the international treaty mandating the destruction of all chemical weapons. The deadline for the stockpile destruction is quickly approaching. Today, however, there is no technology, including incineration, that can guarantee that the process used to dismantle the chemical weapons stockpile will adhere to the many federal environmental protection statutes.<sup>10</sup>

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COMMITMENT EQUATES WITH SLOW PROGRESS, at 3 (1996).

6. See *Chemical Weapons Working Group, Inc.*, 935 F. Supp. at 1209.

7. See *id.* at 1211.

8. See *id.* (the Army has obtained RCRA and CAA permits).

9. See *id.* at 1208.

10. See David A. Koplow, *How Do We Get Rid of These Things?: Dismantling Excess Weapons While Protecting the Environment*, 89 NW. U. L. REV. 445, 446 (1995). The United States has various federal environmental protection and anti-pollution statutes which require both federal and state regulation of hazardous wastes and emissions. There is no proven technology for destroying the nation's stockpile of chemical warfare agents that will completely adhere to these various statutes. See *id.*

## II. The United States' Chemical Weapons Stockpile

The United States Army maintains a stockpile of 30,000 tons of chemical warfare agents manufactured during and after World War II.<sup>11</sup> These agents are stored in over 1.1 million containers at eight different locations across the continental United States.<sup>12</sup> The following is a list arranged according to the percentage of chemical warfare agents which are stored at the particular locations:<sup>13</sup>

1. Tooele Depot, Utah (42.3 percent)
2. Pine Bluff Arsenal, Arkansas (12 percent)
3. Umatilla Depot, Oregon (11.6 percent)
4. Pueblo Depot, Colorado (9.9 percent)
5. Anniston Depot, Alabama (7.1 percent)
6. Aberdeen Proving Ground, Maryland (5 percent)
7. Newport Ammunition Plant, Indiana (3.9 percent)
8. Lexington Depot, Kentucky (1.6 percent)

These chemical weapon stockpiles are continuously monitored and inspected at an annual cost of approximately \$63.8 million.<sup>14</sup>

The actual weapons in these stockpiles consist of rockets, bombs, mines and projectiles.<sup>15</sup> The primary chemicals in these weapons are nerve agents and blister agents. Nerve agents directly attack the human nervous system and are extremely toxic in both liquid and vapor forms.<sup>16</sup> They can be absorbed through the skin or inhaled, causing uncontrollable urination and diarrhea, convulsions and ultimately asphyxiation.<sup>17</sup> Blister agents burn the eyes, skin, lungs and may cause permanent blindness.<sup>18</sup>

Due to age, design and erratic toxicity, the stockpile has little military value. Reports indicate that only 10 percent of the current

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11. See *Chemical Weapons Working Group, Inc.*, 935 F. Supp. at 1209.

12. See *id.*

13. See *Chemical Stockpile Disposal Program Final Programmatic Environmental Impact Statement (FPEIS)*, Program Manager for Chemical Demilitarization, 1-5, 2-1, 2-20 (1988).

14. See CHEMICAL WARFARE REVIEW COMMISSION, REPORT OF THE CHEMICAL WARFARE REVIEW COMMISSION, at 59 (1985).

15. See Major Lawrence E. Rouse, *The Disposition of the Current Stockpile of Chemical Munitions and Agents*, 121 MIL. L. REV. 17, 18 (1988).

16. See COMMITTEE ON ALTERNATIVE CHEMICAL DEMILITARIZATION TECHNOLOGIES, ALTERNATIVE TECHNOLOGIES FOR THE DESTRUCTION OF CHEMICAL AGENTS AND MUNITIONS, at 41-42 (National Research Council 1993) [hereinafter *Alternative Technologies Report*].

17. See Rouse, *supra* note 15, at 19.

18. See *Alternative Technologies Report*, *supra* note 16, at 42.

stockpile is useful for an attack.<sup>19</sup> There has been no production of these chemical warfare agents since 1968. Therefore, these chemical agents are all at least 27 years old. Many of these munitions are in a decaying condition,<sup>20</sup> however, most remain lethal.<sup>21</sup>

### III. The Risks of Continued Storage

There are serious problems associated with the continued storage of chemical warfare agents. Earthquakes, airplane crashes or any other catastrophic event could result in fatal releases of these chemicals.<sup>22</sup> The longer the chemical agents are stored, the greater the chance of leakage. Some of the packaging and containers have deteriorated, causing leakage of the chemical agents. For example, at the Tooele Depot in 1993 approximately 125 gallons of mustard agent leaked out of its container onto the ground.<sup>23</sup>

Moreover, there are phenomenal concerns regarding the continued storage of the M55 rocket. It is the most dangerous weapon in storage and has been the source of the greatest amount of leaking chemicals.<sup>24</sup> The stabilizer in the rocket degrades over time, creating a risk of leakage. Approximately 1,000 rockets stored at Tooele have been categorized as "leakers."<sup>25</sup> Furthermore, routine handling of these rockets may fuse and arm the rockets, resulting in detonation.<sup>26</sup> The eruption of a single M55 rocket could result in the disastrous detonation of all other rockets that are stored in the same area.

In 1987 the Army conducted a quantitative risk assessment which evaluated the continued storage of chemical warfare agents. The Army concluded that the risk of continued storage for individuals living near the TOCDF are 100 times greater than the

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19. See Rouse, *supra* note 15, at 17.

20. See FPEIS, *supra* note 13, at 1-6.

21. See *id.*

22. See *Chemical Weapons Working Group, Inc.*, 935 F. Supp. at 1209.

23. See Lieutenant Colonel Warren G. Foote, *The Chemical Demilitarization Program—Will It Destroy the Nation's Stockpile of Chemical Weapons By December 31, 2004?*, 145 MIL. L. REV. 1, 92 (1994).

24. See Rouse, *supra* note 15, at 20.

25. See *Chemical Weapons Working Group, Inc.*, 935 F. Supp. at 1209. In addition, "leakage of GB nerve agent from ton containers has been cited as a significant risk." *Id.*

26. See U.S. ARMY MATERIAL SYSTEMS ANALYSIS ACTIVITY, INDEPENDENT EVALUATION/ASSESSMENT OF ROCKET, 115mm: CHEMICAL AGENT (GB OR VX), M55, 1, 19-40 (1985) [hereinafter M55 Rocket Study].

risks resulting from the current plan of incineration.<sup>27</sup>

#### IV. Legal Mandates for the Destruction of Chemical Weapons

##### A. *The Department of Defense Authorization Act of 1986*

The Department of Defense Authorization Act of 1986<sup>28</sup> mandates that the Secretary of Defense destroy the nation's stockpile of chemical warfare agents that existed as of November 8, 1985.<sup>29</sup> The original deadline for destroying the weapons was September 30, 1994.<sup>30</sup> This deadline, however, has been extended to December 31, 2004.<sup>31</sup> Congress commanded the Army to accomplish this mission in such a fashion as to provide (1) maximum protection of the environment, the general public and the workers involved in the destruction process; (2) adequate and safe facilities designed solely for the destruction of the chemical agents; and (3) cleanup and destruction of the facilities when the disposal program is complete.<sup>32</sup> A prohibition against any future use of the disposal facility, once destruction is complete, was inserted to assure nearby communities that the demilitarization facilities would not become hazardous waste disposal sites.

##### B. *The Chemical Weapons Convention*

On January 13-15, 1993 the United States and 131 other countries signed the International Convention on Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on their Destruction (CWC).<sup>33</sup> The treaty's ultimate goal is to abolish the existence of chemical warfare agents worldwide. This includes all countries, not just those which are known to possess chemical weapons.<sup>34</sup> In addition, it attempts to permanently ban chemical warfare by eliminating the facilities where the agents have been produced.<sup>35</sup> The United States and all signatory

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27. See *Chemical Weapons Working Group, Inc.*, 935 F. Supp. at 1216. The Army and other independent consultants have evaluated the relative risks and have concluded that the risks of storage outweigh the risks associated with incineration operations at Tooele. *Id.*

28. 50 U.S.C. § 1521 (1993).

29. See 50 U.S.C. § 1521(a) (1993).

30. See 50 U.S.C. § 1521(b)(1)(3)(A) (1985).

31. See 50 U.S.C. § 1521(b)(5) (1993).

32. See 50 U.S.C. § 1521(c) (1993).

33. CWC, *supra* note 3.

34. See *id.*

35. See *id.* at arts. IV, V.

nations are required to develop methods and technologies to destroy chemical warfare agents. Moreover, the treaty regulates the use of chemicals which are not used as warfare agents, but which could easily be transformed into weapons.<sup>36</sup>

The drafters of the treaty were cognizant of its health and environmental repercussions. The treaty explicitly states that each country must "assign the highest priority to ensuring the safety of people and to protecting the environment" during the destruction process.<sup>37</sup> The treaty, however, requires adherence to a definite timetable. Once implemented, it mandates that all members completely destroy all chemical weapons and production facilities within ten years.<sup>38</sup> The deadline is extendible for up to five years, but only in cases of extreme technological, financial or environmental problems beyond the country's control.<sup>39</sup> The failure of one nation to comply does not excuse performance of any other nation. Any nation in non-compliance is subject to sanctions and held accountable to The United Nations General Assembly.<sup>40</sup>

In order to ensure that the chemical weapons are being destroyed, the treaty imposes verification requirements. Each member must allow inspections by an international team of experts.<sup>41</sup> These experts are permitted to inspect both "declared" and "undeclared" facilities.<sup>42</sup> Furthermore, inspectors are permitted to take and analyze any chemicals encountered during the course of their inspection.<sup>43</sup> The financial cost of maintaining the CWC structure may be as high as \$300 million annually.<sup>44</sup>

The treaty will have international environmental benefits. If all the nations comply, the CWC will have a positive effect on the environment by abolishing all chemical weapons and chemical warfare. In addition, the risks of accidents and continued leakage within the stockpiles will be eliminated. Moreover, the United States' compliance with the treaty will encourage other countries to comply, which will benefit the global environment. For example, in Russia, the amount of existing chemical weapons to be destroyed

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36. See CWC, *supra* note 3.

37. *Id.* at art. VII, para. 3.

38. See *id.* at art. IV(A)(17) (setting destruction deadlines).

39. See *id.* at art. IV(A), para. C.20-28.

40. See CWC, *supra* note 3, at art. XII.

41. See *id.* at arts. IV.3, V.3, IX, VIII.D and Verification Annex.

42. See *id.* at Verification Annex., parts VII-IX.

43. See *id.* at Verification Annex, part II, para. E.52-58.

44. See Koplou, *supra* note 10, at 471.

is even larger than the United States' stockpile.<sup>45</sup>

It is important to note that Congress had previously been able to extend the deadline imposed by the Department of Defense Authorization Act of 1986 for the destruction of chemical warfare agents numerous times.<sup>46</sup> Now, the deadline for destroying chemical weapons is a duty promulgated by an international treaty which Congress cannot extend.

## V. Federal Legislation Affecting the Incineration Process

### A. *National Environmental Policy Act of 1969*

The Army's incineration program must comply with the National Environmental Policy Act of 1969 (NEPA).<sup>47</sup> NEPA requires that any federal agency engaging in a "major federal action," must analyze the environmental impacts of the activity.<sup>48</sup> Prior to implementation, the agency must collect data, analyze alternatives, suggest methods for mitigating environmental impacts and engage in a public comment period.<sup>49</sup>

NEPA is an empty basket because it does not require any specific levels of pollution control to be followed or force an agency to make one decision over another. Through its procedural requirements, however, it compels agencies by publicity and litigation to become environmentally accountable. For example, the federal agency must produce an Environmental Impact Statement (EIS) when it proposes to engage in a "major federal action."<sup>50</sup> This EIS must include any environmental effects of the proposed action and alternatives to that action.<sup>51</sup>

The Army's proposed incineration of chemical warfare agents is a type of action regulated by NEPA. The incineration of chemical weapons is likely to have significant environmental impacts. The incineration process may result in the release of toxic

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45. *See id.* at 498.

46. *See* 50 U.S.C. § 1521(b)(5) (1993).

47. 42 U.S.C. §§ 4321-4370(a) (1988).

48. 42 U.S.C. § 4332 (1988).

49. *See id.*

50. *See* 42 U.S.C. § 4332(C) (1988).

51. *See id.* In addition, the responsible official must include "any adverse environmental effects which cannot be avoided should the proposal be implemented, . . . the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources which would be involved in the proposed action should it be implemented." *Id.*



emissions and residues into the atmosphere. Consequently, NEPA will require that the Army and the public are aware of the environmental consequences of the incineration project before actual commencement.<sup>52</sup>

*B. Resource Conservation and Recovery Act of 1976*

The Resource Conservation and Recovery Act of 1976 (RCRA)<sup>53</sup> is a federal statute which regulates the production, transportation, storage, treatment and disposal of hazardous waste.<sup>54</sup> Therefore, the Army must comply with RCRA in carrying out its proposal to incinerate chemical warfare agents.

RCRA, enacted to protect the national health and environment,<sup>55</sup> confers on the Administrator of the Environmental Protection Agency broad powers to regulate hazardous materials.<sup>56</sup> The permit system requires that detailed records be kept by anyone who generates hazardous waste. If the Administrator determines that any hazardous waste is being released from the facility which presents a substantial hazard to human health or the environment, he may order the owner or operator of the facility to conduct testing, analysis and reporting to ascertain the nature and extent of the hazard.<sup>57</sup> Federal facilities are subject to fines and penalties for non-compliance with RCRA provisions.<sup>58</sup>

The incineration of the chemical weapons stockpile will result in a large number of matters covered by RCRA. All demilitarization facilities, including incinerators, which are treatment facilities for hazardous wastes, must comply with RCRA.<sup>59</sup> RCRA contains stringent standards for facilities that use incineration to destroy hazardous wastes. The facilities are required to conduct detailed analysis and trial burns on the waste that they intend to process in order to demonstrate sufficient destruction of the hazardous wastes.<sup>60</sup>

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52. See *Sierra Club v. Hodel*, 848 F.2d 1068, 1097 (10th Cir. 1988).

53. 42 U.S.C. §§ 6901-6991 (1988).

54. See *id.*

55. See 42 U.S.C. §§ 6901-02 (1988). Congress found that "disposal of solid waste and hazardous waste in or on the land without careful planning and management can present a danger to human health and the environment." *Id.* at § 6901(b)(2).

56. See 42 U.S.C. § 6912 (1988).

57. See 42 U.S.C. § 6934(a) (1988).

58. See 42 U.S.C. § 6961 (1988).

59. See 40 C.F.R. § 260.10 (1992).

60. See GOVERNMENT INSTITUTES, INC., ENVIRONMENTAL LAW HANDBOOK, at 430-31 (11th ed. 1991).

RCRA permits are also required for the permanent storage of solid waste created by the incineration process.<sup>61</sup> In addition, construction of any new hazardous waste facilities cannot be performed without a RCRA permit.<sup>62</sup> Therefore, any new Army incineration facility must acquire a RCRA permit.

Furthermore, RCRA will regulate the efficiency of the Army's chemical weapon incinerators. The "destruction removal efficiency" (DRE) standard requires the successful destruction of no less than 99.99 percent of the agents.<sup>63</sup> The incineration testing facility at Johnston Atoll achieved this level, and there is good reason to believe that the full-scale incineration facility at Tooele will be as successful.<sup>64</sup>

### C. Clean Air Act of 1970

The Clean Air Act of 1970 (CAA)<sup>65</sup> affects the Army's destruction of chemical warfare agents. The Act regulates and limits discharges into the atmosphere and establishes air quality standards.<sup>66</sup> The CAA also regulates emissions of specified pollutants.<sup>67</sup> Any new major stationary source of air pollution or modification to an existing source is required to obtain a CAA permit.<sup>68</sup>

The Army is required to comply with all federal, state and local air pollution requirements.<sup>69</sup> In addition, the Army's incinerators, as new stationary sources of air discharges, will be held to the most stringent pollution mitigation standards.<sup>70</sup> Moreover, the CAA will require the Army to implement the most effective available technologies, irrespective of the cost.<sup>71</sup>

Once the Army acquires CAA permits for its incineration facilities, each facility must conform its discharges to the permit. Thereafter, if any incinerators discharge emissions that are either larger in quantity or inconsistent with those listed on the permit, the Army will be in violation of its CAA permit. In addition, the Army

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61. See 42 U.S.C. §§ 6901-6991(i) (1988).

62. See *id.*

63. See Koplow, *supra* note 10, at 503.

64. See *id.*

65. 42 U.S.C. §§ 7401-7642 (1988).

66. See *id.* at § 7409 (1988).

67. See 40 C.F.R. § 50 (1993).

68. See 42 U.S.C. § 7410 (1988).

69. See 42 U.S.C. § 7418(a) (1988).

70. See *id.* at § 7411 (1988); see also 40 C.F.R. § 60 (1993).

71. See 42 U.S.C. § 7411 (1988).

will also be forced to comply with the CAA emergency preparedness plan in order to prepare for the possibility of accidental discharges.<sup>72</sup>

*D. Clean Water Act*

The Clean Water Act of 1972 (CWA)<sup>73</sup> attempts to eliminate the discharge of pollutants into navigable waters and to preserve the purity of the nation's water supply. It authorizes the Environmental Protection Agency (EPA) to establish limits on the discharge of pollutants and requires the states to define water quality objectives.<sup>74</sup> As with the other federal environmental protection statutes, the CWA provides a permit process for foreseeable polluters.<sup>75</sup>

The Army's current plan for incineration of chemical warfare agents does not produce any liquid wastes that would be regulated by the CWA. If the Army decides, however, to use an alternative technology at a location other than Tooele that produces liquid discharges, then the CWA regulation would apply.

*E. Comprehensive Environmental Response, Compensation, and Liability Act of 1980*

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)<sup>76</sup> and the Superfund Amendments and Reauthorization Act of 1986 mandate requirements and provide funding for the cleanup of hazardous waste disposal sites.<sup>77</sup> Under the CERCLA scheme, those responsible for creating a leak bear the expenses of cleanup and mitigation. If the responsible parties cannot be reached, the statute creates a "Superfund" to pay the expenses. The EPA, any state or citizen, through litigation, may enforce the statute.<sup>78</sup>

Currently, the Army must comply with CERCLA with respect to the landfills and burial sites where chemical weapons have been buried. The Army will also have to comply with CERCLA with respect to the actual incineration of chemical warfare agents. In both instances, however, the Army must comply only to the extent

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72. See 42 U.S.C. § 7412(r) (1988).

73. 33 U.S.C. §§ 1251-1387 (1986).

74. See *id.* at § 1314.

75. See *id.* at § 1344.

76. 42 U.S.C. §§ 9601-9675 (1988).

77. See *id.*

78. See *id.*

that there is a spill or leakage of the chemical agents.

#### F. Toxic Substance Control Act of 1973

The Toxic Substance Control Act of 1973 (TSCA)<sup>79</sup> regulates the burning of hazardous substances including PCB's, which are contained in the M55 rocket.<sup>80</sup> TSCA regulates the Army's actual operation of the incineration facility because it establishes percentage removal criteria for incinerators.<sup>81</sup> The Army must comply with TSCA by destroying the required percentage of chemical agents.

#### VI. The Army's Experience with Disposal of Chemical Weapons

The Army has disposed of chemical substances in the past. Poor records and lack of the requisite technology, however, prevents adequate evaluation of these methods. Prior to 1969, the Army practiced ocean dumping. The Army has buried over 60,000 M55 rockets off the eastern shore of the United States.<sup>82</sup> The Army also used both public and military landfills to dispose of chemical weapons.<sup>83</sup> However, since Congress passed The Marine Protection, Research and Sanctuaries Act of 1972,<sup>84</sup> ocean dumping has been prohibited. In addition, the Army's practices of land burial and open-pit burning of chemicals have been discontinued.

#### VII. The Army's Current Plan of Incineration

In an effort to find the safest and most efficient method for destroying chemical weapons, the Army has analyzed over 300 destruction technologies.<sup>85</sup> In 1972 at Rocky Mountain Arsenal, Colorado, the Army incinerated 6,179,000 pounds of chemical warfare agents to test the validity and success of the incineration process.<sup>86</sup> During the two year testing period, only four minor leaks occurred.<sup>87</sup> This operation revealed that millions of pounds

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79. 15 U.S.C. §§ 2601-2692 (1982).

80. *See id.*

81. *See id.*

82. *See* Koplou, *supra* note 10, at 34.

83. *See id.* at 34.

84. Pub. L. No. 92-532, 86 Stat. 1052; Pub. L. No. 93-254, 88 Stat. 50 (codified as amended in various sections of 33 U.S.C.); 16 U.S.C. §§1431-34.

85. *See* Rouse, *supra* note 15, at 35.

86. *Id.* at 36.

87. OFFICE OF THE DEPARTMENT OF THE ARMY PROJECT MANAGER FOR CHEMICAL DEMILITARIZATION AND INSTALLATION RESTORATION, PROJECT EAGLE—PHASE I, BULK MUSTARD DEMILITARIZATION AT ROCKY MOUNTAIN

of chemical agents could be destroyed by incineration without significant injury to humans or the environment.

In 1979 the Army constructed the Chemical Agent Munitions Disposal System (CAMDS) at the Tooele Army Depot.<sup>88</sup> CAMDS' purpose was not the actual incineration of chemical warfare agents. Rather, it was built primarily to test and evaluate the incineration program.<sup>89</sup> By 1988 CAMDS had incinerated 83,000 pounds of chemical agents.<sup>90</sup> In order to evaluate the environmental effects of the incineration process and comply with NEPA, the Army completed a Final Program Environmental Impact Statement (FPEIS).<sup>91</sup> On-site incineration at the Tooele facility was selected for the disposal program. Alternative methods of disposal were rejected as either unreasonable or unproven.<sup>92</sup> In addition, the American Society of Mechanical Engineers concluded that incineration was the best option for the destruction of chemical warfare agents.<sup>93</sup>

In 1988 the Johnston Atoll Chemical Agent Disposal System (JACADS) was constructed on Johnston Island in the Pacific Ocean.<sup>94</sup> During a three year period of testing JACADS, over 40,000 munitions were destroyed.<sup>95</sup> The MITRE Corporation was retained to evaluate the JACADS incineration program. MITRE determined that JACADS met the overall safety performance goals. Its report concluded that although JACADS experienced some problems, the incineration program had "effectively and safely disposed of chemical agent[s] and munitions."<sup>96</sup>

During the overall six year testing period of the JACADS, over 2,000,000 pounds of chemical agents were processed by incineration.<sup>97</sup> There were only three releases of chemical agents into the environment.<sup>98</sup> The Army has used the data it received from JACADS to change the design of the incineration facility and to

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ARSENAL, DENVER, COLO., FINAL REPORT 5-45 (1975).

88. See *Chemical Weapons Working Group, Inc.*, 935 F. Supp at 1209.

89. See *id.*

90. See *id.*

91. See *id.* at 1210.

92. See *id.*

93. See Rouse, *supra* note 15, at 42.

94. See *Chemical Weapons Working Group, Inc.*, 935 F. Supp. at 1209.

95. See Koplou, *supra* note 10, at 518.

96. *Chemical Weapons Working Group, Inc.*, 935 F. Supp. at 1211.

97. See *id.*

98. See Defendant EG & G's Proposed Findings of Fact and Conclusions of Law, at 13 (submitted in *Chemical Weapons Working Group, Inc. v. United States Dep't of the Army*, 935 F. Supp. 1206 (D. Utah 1996)).

modify operation procedures at Tooele. This was specifically implemented through a "lessons learned" program.<sup>99</sup>

Overall, the design, operation and worker protection procedures at the JACADS incineration facility were safe and effective.<sup>100</sup> During the 6,000,000 worker hours, only one minor injury occurred as a result of exposure to a blister agent.<sup>101</sup> In addition, no employee at the JACADS facility was ever exposed to any nerve agent,<sup>102</sup> which was evidenced by routine blood testing.<sup>103</sup>

The data received from the JACADS supports the Army's conclusion that on-site incineration is the safest and most efficient known technology for destroying chemical weapons. The Army intends to reproduce the JACADS facility at its eight locations where chemical weapon stockpiles are located. Furthermore, on-site incineration eliminates the need to transport chemical agents, thus, eliminating the risks of leakage during transportation.

#### VIII. Incineration at Tooele, Utah

In January, 1993 the Army constructed the Tooele Chemical Disposal Facility (TOCDF) at the Tooele Depot in Utah. This is the first full-scale fully operational incineration facility for chemical warfare agents in the continental United States.<sup>104</sup> Since 1986, the Army has been in the arduous process of acquiring the necessary environmental permits to operate the TOCDF.<sup>105</sup> In 1989 the Utah State Solid and Hazardous Waste Control Board approved the Army's plan for the TOCDF.<sup>106</sup> In addition, the Army has obtained RCRA and CAA permits.<sup>107</sup>

The TOCDF operations schedule indicates that the disposal of all chemical weapons stored at the Tooele Army Depot will be accomplished in thirteen individual "campaigns."<sup>108</sup> The current schedule calls for the complete destruction of all 13,000 tons of agents at the TOCDF within approximately seven years.<sup>109</sup> This

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99. *Chemical Weapons Working Group, Inc.*, 935 F. Supp. at 1211.

100. *See supra* note 97, at 14.

101. *See id.* at 14, 15.

102. *See id.* at 15.

103. *See id.*

104. *See Chemical Weapons Working Group, Inc.*, 935 F. Supp. at 1211.

105. *See id.*

106. *See id.*

107. *See id.*

108. *See United States' Proposed Findings of Fact and Conclusions of Law*, at 23 (submitted in *Chemical Weapons Working Group, Inc. v. United States Dep't of the Army*, 935 F. Supp. 1206 (D. Utah 1996)).

109. *See id.* at 23.

time frame ensures that the Army complies with both the Department of Defense Authorization Act of 1986<sup>110</sup> and the CWC's deadlines.<sup>111</sup>

The TOCDF consists of five main incinerators.<sup>112</sup> The two Liquid Incinerators burn liquid chemical warfare agents.<sup>113</sup> The Deactivation Furnace System burns the M55 rockets and other explosives.<sup>114</sup> A Metal Parts Furnace incinerates the containers, bombs and projectiles after the chemical agents are drained.<sup>115</sup> Finally, a Dunnage Incinerator burns the waste that results from the incineration process.<sup>116</sup> In addition, the TOCDF has a ventilation system which channels the air through charcoal filters. This system cleans the contaminated air before emitting it outside the plant.<sup>117</sup> Upon completion, the facility will undergo cleanup and closure operations.

#### IX. Opponents of Incineration

Opponents of the incineration process claim it will have adverse effects on human health and the environment due to the risk of chemical releases at the incineration facility. Environmental groups have alleged that: (1) incineration will ultimately emit chemical agents into the atmosphere; (2) there is no present technology capable of accurately measuring the amount of emissions; (3) incineration will produce hazardous waste products which will subsequently need to be stored; and (4) an accident in an incinerator would be devastating.<sup>118</sup> Naturally, the nearby communities of the incineration facilities want the Army to find an alternative. In particular, they want the Army to transport the chemical agents away from their communities.<sup>119</sup>

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110. See 50 U.S.C. § 1521(b)(5) (1993) (the deadline for destroying all chemical warfare agents is Dec. 31, 2004).

111. See CWC, *supra* note 3.

112. See Brief for the United States Department of the Army at 6 (the Chemical Weapons Working Group, Inc. has appealed the decision of the United States District Court for the District of Utah's decision in *Chemical Weapons Working Group, Inc. v. United States Dep't of the Army*, 935 F. Supp. 1206 (D. Utah 1996)).

113. See *id.* at 6.

114. See *id.*

115. See *id.*

116. See *id.* at 7.

117. See Brief for the United States Department of the Army, *supra* note 111, at 7.

118. See Koplów, *supra* note 10, at 522-23.

119. See Foote, *supra* note 22, at 90.

The Army has examined the option of transporting the chemical warfare agents to an isolated location. This option, however, was rejected because it involved a great risk to public health, safety and the environment due to potential leakage during transportation.<sup>120</sup> As with any other proposed chemical weapon destruction method, there are dangers with the incineration process. No alternative technology, however, has been proven to destroy the chemical weapons in a manner that provides less risks to the environment and, simultaneously, is capable of destroying the stockpile within the required deadlines.

X. Chemical Weapons Working Group, Inc. v. United States  
Department of the Army

In May 1996, the Chemical Weapons Working Group, Inc., Sierra Club and the Vietnam Veterans of America Foundation filed suit against the Army in the United States District Court for the District of Utah.<sup>121</sup> The groups challenged the operation of the TOCDF and requested injunctive relief to enjoin the Army from beginning incineration of chemical weapons at Tooele.<sup>122</sup> The plaintiffs alleged that the operation of the TOCDF will violate TSCA because of the Army's failure to show that incineration will destroy the chemical warfare agents at the required level of efficiency.<sup>123</sup> Before the incineration facility became fully operational, however, the TOCDF was required under RCRA and TSCA to undergo a series of trial burns. This testing process ensured that the incinerators could destroy the chemical weapons without releasing significant amounts of chemical agents into the environment.<sup>124</sup> The destruction removal efficiency was greater than 99.9999%, which surpasses both the RCRA and TSCA requirements.<sup>125</sup> Furthermore, the United States Environmental Protection Agency has approved these results.<sup>126</sup> Therefore, the court correctly held that operation of the TOCDF would not result in a future threat of violation to TSCA's removal efficiency requirements.<sup>127</sup>

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120. *See id.* at 90.

121. *See* Chemical Weapons Working Group, Inc. v. United States Dep't of the Army, 935 F. Supp. 1206 (D. Utah 1996).

122. *See id.*

123. *See id.* at 1208.

124. *See id.* at 1211.

125. *See id.*

126. *See* Chemical Weapons Working Group, Inc., 935 F. Supp. at 1212.

127. *See id.* at 1216.



In addition, the plaintiffs claimed that the Army is in violation of NEPA for failing to supplement the necessary Environmental Impact Statements in light of substantial new information. In particular, the plaintiffs claimed that significant problems arose at the JACADS which have not been corrected at the TOCDF.<sup>128</sup> The Army admits that there have been three atmospheric releases of chemical agents due to incineration activities at the JACADS.<sup>129</sup> These releases, however, were small and presented no risks of injury to the workers at the JACADS or to the environment.<sup>130</sup> After studying these releases at the JACADS, the Army incorporated changes to the Tooele facility.<sup>131</sup> Therefore, the court correctly found that the "problems either do not exist or that corrective actions have been taken in constructing and testing the systems at TOCDF."<sup>132</sup>

An EIS must be updated only when an agency makes substantial changes to the project or where there is a significant amount of new information regarding the project and its impacts.<sup>133</sup> The incineration at Tooele will constitute a major federal action, which would require a supplemental EIS if "new information is sufficient to show that the remaining action will 'affect the quality of the human environment' in a significant manner or to a significant extent not already considered."<sup>134</sup> The plaintiffs argued that the performance of the incineration facility at the JACADS constitutes new information which must be evaluated in a supplemental EIS.<sup>135</sup>

The court held that the performance of the incineration facility did not constitute new information which must be re-evaluated in an EIS under NEPA.<sup>136</sup> The court stated that the "Army has investigated the more serious operational allegations . . . and found that they were not significant, or that the problems . . . have been

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128. *See id.* at 1212.

129. *See* United States' Proposed Findings of Fact and Conclusions of Law, at 15 (submitted in *Chemical Weapons Working Group, Inc. v. United States Dep't of the Army*, 935 F. Supp. 1206 (D. Utah 1996)).

130. *See Chemical Weapons Working Group, Inc.*, 935 F. Supp. at 1212.

131. *See id.* Each of the releases were investigated and changes were made in equipment, design and operations in order to address the problems. These changes were specifically implemented at TOCDF as part of the "lessons learned program." *Id.*

132. *Id.* at 1212.

133. *See* 40 C.F.R. § 1502.9(c)(1)(i) and (ii) (1993).

134. *Marsh v. Or. Natural Resources Council*, 490 U.S. 360, 374 (1989).

135. *See Chemical Weapons Working Group, Inc.*, 935 F. Supp. at 1217.

136. *See id.*

adequately mitigated. The Army's analysis of these problems appears to be thorough and reasonable."<sup>137</sup>

The court was correct in deferring to the Army's conclusions that the information obtained from the JACADS was not the type necessary to be evaluated in a supplemental EIS. The United States Supreme Court has stated that "[b]ecause analysis of the relevant documents 'requires a high level of technical expertise,' we must defer to 'the informed discretion of the responsible federal agencies.'"<sup>138</sup>

The Army's incinerators will create and release some dioxin into the atmosphere. The State of Utah's risk assessment, complying with EPA standards, calculated the overall risks of dioxin exposure from the TOCDF emissions and found that the cancer risks do not exceed the EPA's guidance levels for ten, fifteen, and thirty year operating periods at the TOCDF.<sup>139</sup> The plaintiffs claimed that there is new information regarding the effects of dioxin exposure and the levels at which it becomes harmful.<sup>140</sup> As a result, the plaintiffs claimed that the dioxin risks to individuals living in the vicinity of the Tooele Depot have not been adequately evaluated, as required by NEPA.<sup>141</sup> Therefore, the plaintiffs argued that the court must issue an injunction against operations at the TOCDF.

The court appropriately concluded that the health risks associated with dioxin exposure are uncertain. Therefore, this assertion was not sufficient grounds to enjoin the Army from engaging in the incineration program at Tooele.<sup>142</sup> The effects of dioxin exposure are "far from settled issues within the scientific community."<sup>143</sup> This is evidenced by the conflicting testimony offered by each side's expert witnesses at the trial.<sup>144</sup> Mere threatened, speculative harm, without any concrete evidence does not amount to irreparable injury for purposes of granting the

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137. *Id.*

138. *Marsh*, 490 U.S. at 377 (citing *Kleppe v. Sierra Club*, 427 U.S. 390, 412 (1976)).

139. *See* United States' Proposed Findings of Fact and Conclusions of Law, at 25 (submitted in *Chemical Weapons Working Group, Inc. v. United States Dep't of the Army*, 935 F. Supp. 1206 (D. Utah 1996)).

140. *See Chemical Weapons Working Group, Inc.*, 935 F. Supp. at 1213.

141. *See id.*

142. *See id.*

143. *Id.*

144. *See id.*

injunctive relief,<sup>145</sup> sought by the plaintiffs. "When specialists express conflicting views, an agency must have discretion to rely on the reasonable opinions of its own qualified experts even if . . . a court might find contrary views more persuasive."<sup>146</sup>

Finally, the plaintiffs argued that the Army is in violation of NEPA for failing to consider developments in alternative technologies.<sup>147</sup> Incineration is not the only method for destroying chemical warfare agents. For example, Cryofracture submerges the munitions in liquid nitrogen, which freezes the agent. The frozen part is then fractured into pieces and incinerated in a kiln. Cryofracture, however, is in the development stage and remains unproven.<sup>148</sup> Moreover, it still requires incineration and, therefore, will not satisfy the environmental groups.

Chemical Neutralization and Biodegradation may be used to dispose of chemical warfare agents.<sup>149</sup> This method, however, will result in the production of large volumes of neutralized agents and the need to dispose of biological sludges, which will necessitate further processing.<sup>150</sup>

The M4 Molten Metal Process, which is officially endorsed by the Sierra Club,<sup>151</sup> is another possible alternative. It is claimed that this process is able to operate with no emissions.<sup>152</sup> The materials are introduced into molten metal at a temperature of 2400-3200F. It is also alleged that the materials can be reconfigured into usable products such as stainless steel tools.<sup>153</sup>

The court held that the Army's decision that the alternative technologies are not sufficient as to require a supplemental EIS was

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145. See *Wisconsin Gas Co. v. FERC*, 758 F.2d 669, 674 (D.C. Cir. 1985). The movant must show that irreparable injury is "both certain and great; it must be actual and not theoretical." *Id.*

146. *Marsh*, 490 U.S. at 378.

147. See *Chemical Weapons Working Group, Inc.*, 935 F. Supp. at 1208.

148. See Foote, *supra* note 22, at 42 (a discussion on cryofracture). A cryofracture plant would be a "first-generation facility." Therefore, unforeseeable problems would be likely to occur. *Id.*

149. See KENTUCKY ENVIRONMENTAL FOUNDATION, *supra* note 5, at 7. The advantages of chemical neutralization are particularly low costs and the use of common industrial chemicals. It has formed the basis for the demilitarization programs of several countries including Britain and France. *Id.*

150. See *id.* at 7, 8; see also Koplou, *supra* note 10, at 516. Experts have concluded that chemical neutralization "was defective, . . . slow, possibly reversible, incompletely successful in destroying all the active agent, and produc[es] substantial quantities of toxic waste." *Id.* at 516.

151. Telephone Interview with Cindy King, Sierra Club (Nov. 1, 1996).

152. See KENTUCKY ENVIRONMENTAL FOUNDATION, *supra* note 5, at 9.

153. See *id.*

not made arbitrarily or capriciously and was not a violation of NEPA.<sup>154</sup> The court rejected the plaintiffs' argument that the technologies present reasonable alternatives that can be implemented immediately. The Army's experts support the court's holding.<sup>155</sup> There is no evidence that any alternative technology will definitely destroy chemical weapons more efficiently and pose fewer risks to individuals and the environment than incineration. A conservative estimate of the time required for implementation of any alternative technology at Tooele would be at least six and one-half years.<sup>156</sup> With the deadly consequences of continued storage and an international treaty deadline quickly approaching, the Army, the public and the environment cannot afford to prolong the disposal period for a shot in the dark at minimal improvements in technology.

Furthermore, in 1993 the National Research Council (NRC) evaluated the Army's chemical disposal program and the progress of alternative technologies.<sup>157</sup> The Council concluded that the Army should continue development of the incineration program because there were no feasible alternatives for disposal.<sup>158</sup>

For the above stated reasons, the court denied the plaintiffs' request for injunctive relief. In January, 1997 the plaintiffs filed a second motion for a preliminary injunction to enjoin the Army from incinerating chemical warfare agents at the TOCDF.<sup>159</sup>

As of March 1997, the TOCDF was operating in the "shake-down" phase, a period designed to identify possible mechanical difficulties and ensure that the facility has reached operational readiness.<sup>160</sup> During this shakedown period, three events have occurred which have caused the Army to temporarily halt operation of the TOCDF: (1) detection of low levels of agent in two filter containment vestibules; (2) leakage of a small quantity of decontamination fluid through hairline cracks in a second level cement floor to a first floor electrical room; and (3) migration of agent into an observation corridor.<sup>161</sup>

Citing these events, the plaintiffs opined that the TOCDF's

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154. See *Chemical Weapons Working Group, Inc.*, 935 F. Supp. at 1219.

155. See *id.*

156. See *id.* at 1214.

157. See KENTUCKY ENVIRONMENTAL FOUNDATION, *supra* note 5, at 5.

158. See *id.*

159. See *Chemical Weapons Working Group, Inc. v. United States Dep't of the Army*, 963 F. Supp. 1083, 1085 (D. Utah 1997).

160. See *id.* at 1086.

161. See *id.*

operation is substantially different from that contemplated during the NEPA compliance process and presents a risk of irreparable harm.<sup>162</sup> Again, the plaintiffs' motion for a preliminary injunction was denied.<sup>163</sup> The court held that: (1) the occurrence of several incidents at the facility did not support a finding of irreparable harm; (2) the asserted risks from emissions at the facility did not support a finding of irreparable harm; and (3) the public interest was best served by continued destruction of chemical warfare agents at the facility.<sup>164</sup> The Tenth Circuit has affirmed this decision.<sup>165</sup>

The Army has withstood its first major legal battle regarding the incineration facility at Tooele. The plaintiffs, for the most part, were able to claim only procedural violations under the federal environmental protection statutes because full-scale incineration has not yet begun. Once full-scale operations occur for a significant period of time, there is likely to be a plethora of lawsuits claiming substantive violations. The Army has obtained all of the necessary environmental permits. Therefore, this decision gives the Army the green light to commence full-scale incineration of the stockpile of chemical warfare agents.

#### XI. International Treaty vs. Federal Environmental Protection Statutes

The incineration of chemical warfare agents and compliance with the CWC will inevitably come into conflict with various federal environmental protection statutes described above. International treaties and federal statutes are given equal legal weight under the Constitution.<sup>166</sup> Therefore, both must be obeyed. When there is a conflict between the two, the most recent law will dominate.<sup>167</sup> As of today, the CWC, being the more recent law, would trump the federal environmental protection statutes in the event of a conflict. This means that the Army may continue to incinerate based on the CWC mandate, irrespective of the environmental harm. Courts, however, seldom invalidate either type of law.<sup>168</sup> Instead, courts

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162. *See id.*

163. *See id.* at 1083.

164. *Id.*

165. *Chemical Weapons Working Group, Inc. v. United States Dep't of the Army*, 111 F.3d 1485 (10th Cir. 1997).

166. *See* RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW OF THE UNITED STATES §§ 115, 302(2) (1987).

167. *See id.* at § 115.

168. *See United States v. Palestine Liberation Org.*, 695 F. Supp. 1456 (S.D.N.Y. 1988). The court stated that "[u]nder our constitutional system, statutes and

will attempt to accommodate both bodies of law.<sup>169</sup> Once full-scale incineration at Tooele begins and comes into conflict with federal environmental protection statutes, a compromise will have to be made.

It will be difficult to find a common ground. The CWC explicitly states that each nation must "assign the highest priority . . . to protecting the environment."<sup>170</sup> The treaty, however, requires the destruction of all chemical weapons and mandates sanctions for non-compliance.<sup>171</sup> Moreover, environmental barriers are not an excuse for failing to comply with the treaty's requirements and deadlines.

## XII. Conclusion

The United States Army must destroy its stockpile of chemical warfare agents in order to comply with federal legislation, an international treaty, and to eliminate the risks associated with the continued storage of these weapons. Environmental groups fully support this mandate. They, however, adamantly oppose the Army's decision to use incineration to accomplish this goal. Instead, environmentalists advocate the use of alternative technologies to destroy chemical weapons. The alternative technologies, however, are unproven and cannot guarantee any less risk to human health or to the environment than incineration. Moreover, implementation of any alternative technology will take years. Neither the Army nor the environment can wait. The risks of continued storage of these weapons is too great.

Furthermore, the deadlines for destruction are quickly approaching. The Chemical Weapons Working Group, Inc. claims that the deadline is immaterial because Congress has already extended the timetable numerous times under the Department of Defense Authorization Act of 1986.<sup>172</sup> Therefore, the group

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treaties are both the supreme law of the land, and the Constitution sets forth no order of precedence to differentiate between them. Whenever possible, both are to be given effect." *Id.* at 1464.

169. *See id.* at 1465. The court stated that "Congress has the power to enact statutes abrogating prior treaties or international obligations entered into by the United States. However, unless the power is clearly and unequivocally exercised, this court is under a duty to interpret statutes in a manner consonant with existing treaty obligations." *Id.* at 1465.

170. CWC, *supra* note 3, at art. IV.

171. *See CWC, supra* note 3, at art. XII.

172. Telephone interview with Craig Williams, Spokesman for Chemical Weapons Working Group, Inc. (Nov. 1, 1996).

claims that more time should be spent on developing an alternative technology for destroying chemical warfare agents. The CWC's deadline, however, is a matter of international treaty, which Congress can no longer extend. The Army must begin incineration in order to eliminate the risks of continued storage and to comply with a deadline which cannot be extended.

*Chemical Weapons Working Group, Inc. v. United States Dep't of the Army*,<sup>173</sup> allows the Army the ability to begin, for the first time ever, major full-scale incineration of chemical warfare agents. Full-scale incineration will determine if the chosen destruction process does violence to the substantive standards of the federal environmental protection statutes. Incineration will cause a confrontation between an international treaty and federal legislation, which will require courts to find a compromise. Until that time occurs, the Army is free to commence incineration.

*Christopher T. DeLisi*

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173. 111 F.3d 1485.