

05-1760-cv

IN THE
United States Court of Appeals
FOR THE SECOND CIRCUIT

—▶◀—

In Re:
“Agent Orange”
Products Liability Litigation

DANIEL RAYMOND STEPHENSON, SUSAN STEPHENSON,
DANIEL ANTHONY STEPHENSON and EMILY ELIZABETH STEPHENSON,
Plaintiffs-Appellants,

v.

DOW CHEMICAL Co. and MONSANTO Co.,
Defendants-Appellees.

*On Appeal from the United States District Court
for the Eastern District of New York*

FINAL REPLY BRIEF FOR PLAINTIFFS-APPELLANTS

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I. INTRODUCTION¹

In their response to the Stephensons' brief, Defendant-Appellees (hereinafter also "Manufacturers") fail their own test. They predicate their argument on the fact that "military officials ordered the product with knowledge of the presence of dioxin". RSGCD5. This reply brief will demonstrate that none of the government personnel who participated in the actual decision to select 2,4,5-T for use in Vietnam, prepared or approved the contract specifications, or dealt with the manufacturers over the negotiation and performance of the contracts knew that the 2,4,5-T purchased by the Government was contaminated with dioxin. Not a single one. And, out of hundreds of thousands of pages of documents generated by these government personnel, not one mentions the word "dioxin" – including, most importantly, any specifications for Manufacturers' 2,4,5-T.²

¹ Plaintiffs adopt the factual statements made in the opening briefs of the Anderson, Bauer, and Stephenson plaintiffs, as well as those made in any of their reply briefs. For convenience, the briefing in this action will be abbreviated as follows (with each brief followed immediately by the cited page): Anderson opening brief – AA; Bauer opening brief – AB; Isaacson opening brief – AI; Stephenson opening brief – AS; Appellees' Stephenson response – RSGCD; Appellees' Isaacson response – RIR; Respondents' Appendix – RA.

² Manufacturers made four different products which contained 2,4,5-T: Agents Pink, Green, Purple and Orange. Manufacturers' 2,4,5-T contained the highly toxic dioxin contaminant. In order to avoid confusion, Plaintiffs will refer to 2,4,5-T unless the context requires a particular Agent to be named.

The Supreme Court's decision in *Boyle v. United Technology*, 487 U.S. 500,512 (1987) requires manufacturers to show that the U.S. government approved "reasonably precise design specifications" and that "the supplier warned the United States about the dangers in the use of the equipment that were known to the supplier, but not known to the United States." AS9-12. Here, the Government's design specifications never contemplated nor mentioned dioxin, while Manufacturers hid information about dioxin and its hazards from those government personnel involved in the purchase of their products. It was because Manufacturers *chose* to use defective, proprietary production *processes* that caused them to sell an extremely contaminated stock herbicide to both their commercial and government customers.

Therefore, Manufacturers also fail this court's test – that summary judgment should be denied unless they can show, as a matter of law, that the Government approved specifications which precluded them from accommodating safety in a different fashion. Manufacturers could have accommodated safety by using the Boehringer process in their production of 2,4,5-T or producing 2,4,5-T at controlled lower temperatures. Nothing in the specifications precluded them from doing so, except their own desire to increase revenues by speeding up their production, whether it be to the government or to commercial purchasers. It was their own choice, and the harm that has resulted from that is their responsibility.

This Court cannot pass on this summary judgment without considering Plaintiffs' substantial evidence. Manufacturers agree that summary judgments are subject to *de novo* review, and that courts must construe the evidence in the light most favorable to the non-moving party, drawing all reasonable inferences in Stephenson's favor. RSGCD73. Nevertheless, the court below never mentioned any evidence presented by the Plaintiffs, ignoring the extensive documents, deposition excerpts and expert affidavits timely filed on the Friday before the court's 2/9/04 Monday morning decision. And although the court was subsequently provided with two additional affidavits, this time by the country's leading expert on government contract law, Professor Ralph Nash, A6989-A7000 and A10347-A10355, even more documentary and deposition evidence, and two extensive factual rebuttals, A7011-A7183, A7795-A7941, the court still finalized its decision without mentioning *any* of Plaintiffs' evidence. AI8-9.

The court below had no basis for ignoring all evidence proffered by the parties opposing summary judgment. Here, in stark contrast to Manufacturers' representation that the facts are not contested, RSGCD10n.3, virtually every "fact" put forward by Manufacturers is, *at a minimum*, hotly contested on the basis of substantial evidence. "[T]he court cannot try issues of fact: it can only determine whether there are issues to be tried." *Schering Corp. v. Home Ins. Co* 712 F2d 4, 9 (1983). Nevertheless, that

is exactly what the court below did.

Critically, to prevail on the military contractor defense, it is the defendants who have to show that the government *did* exercise its discretion -- the plaintiffs do not have to show the government did *not* exercise its discretion. The defendants "bear the burden of proving each element of the government contractor defense."... "On summary judgment[,] this means that [defendants], as the party-movant[s] that bear the ultimate burden of persuasion at trial, must establish that there is no genuine issue of material fact as to every element of the defense." .. (the "trier of fact should not evaluate the wisdom or quality of any government decision, but must locate the actual exercise of the discretionary function"); ... (the inquiry regarding whether "the government actually considered the particular specification" is "a factual one, and conclusions will, of course, vary greatly according to the circumstances") Ultimately, then, unless reasonable minds could not disagree, "whether the facts establish the conditions for the [military contractor] defense is a question for the jury." *Boyle*, 487 U.S. at 514.

Ruth v. A.O. Smith Corp., 2005 WL 2978694 (N.D. Ohio) (cites and notes omitted).

Manufacturers fail to meet this burden.

II. THE PAST HISTORY OF DECISIONS RELATED TO THE GOVERNMENT CONTRACTOR DEFENSE

Manufacturers pray that this court will ignore the *facts* before it *and blindly* defer to statements made by a select group of other courts, which either did not decide this issue, decided it under different law, or decided it with far inferior factual presentations. (See, e.g., *In re "Agent Orange" Prod. Liab. Litig.*, 818 F.2d 187 (2d Cir. 1987); *Ivy v. Diamond Shamrock Chemicals Co.*, 996 F.2d 1425 (2d Cir. 1993);

Hercules Inc. v. United States, 24 F.3d 188 (Fed. Cir. 1994); and *Miller v. Diamond Shamrock Co.*, 275 F.3d 414 (5th Cir. 2001))³

When this court previously upheld the application of the government contractor defense, 818 F.2d 187 (2d Cir. 1987), it did so before the Supreme Court articulated the defense’s proper requirements in *Boyle*. Unlike the “inexplicable and unjustifiable failure of the opt-outs’ counsel to brief the issue,” to this court, AS14n.1, Stephenson has offered meaningful evidence which was never offered in 1987, including discovery from other litigation involving Manufacturers and the government and five uncontroverted expert affidavits. As this court well knows, whether the government contractor defense defeats Plaintiffs’ claims is a fact-intensive inquiry that can only be evaluated based upon the record on appeal in this case. The principle that “a fact-sensitive issue is not amenable to summary judgment” has long been recognized in this Circuit. *Hunter v. Greene*, 734 F.2d 896, 901 (2d Cir. 1984).

Furthermore, despite Defendants’ protestations to the contrary, RSGCD74, this

³ At RSGCD9, Appellees cite to a footnote in a brief filed by the U.S. government in a wholly separate case for Vietnamese nationals. This bears no weight: 1) it is contrary to the lengthy brief filed by the government when it was an actual litigant in the *Agent Orange* cases, A5804-5846; 2) it is an *ad hominem* statement not based on any legal or factual analysis; and 3) it was not filed in any veterans’ action. See *Baker v. Latham*, 72 F3rd 246, 255 (2nd Cir. 1995) (allegation cannot be considered on summary judgment without supporting evidentiary facts).

Court has not decided the government contractor defense in an *Agent Orange* case since *Boyle*. *Ivy* involved neither factual nor legal briefing of the issue and this Court specifically acknowledged that the availability of the defense was “not...a foregone conclusion.” RSGCD81. Implicit in that acknowledgment is that the Court must decide from the facts presented in the present case whether the Manufacturers can satisfy the elements of *Boyle* as a matter of law.

The cases Manufacturers cite from other jurisdictions do not apply. *Hercules, supra.*, RSGCD1,75,81, dealt only with certain Manufacturers’ right to reimbursement of litigation expenses from the U.S. Government: *Hercules’* discussion of the government contractor defense was theoretical and neither based on any facts presented nor any analysis of the *Boyle* criteria. If anything, *Hercules* supports Stephensons’ contention that the Manufacturers exclusively controlled deficient processes which resulted in a product badly contaminated with dioxin: “Put another way, nothing the government did or failed to do had any impact upon Hercules' and Thompson's production of Agent Orange.” 24 F 3d at 197.

Finally, Manufacturers cite repeatedly to *Miller, supra.*, as “...yet another post-*Boyle* decision...” where summary judgment was granted in their favor. RSGCD1,81. Actually, *Miller* is the only post-*Boyle* opinion Manufacturers cite where summary judgment was granted on the government contractor defense.

However, given that the MDL381 record was being stored at the National Archives and unavailable to the court, and in the absence of any evidentiary presentation by Plaintiffs with the exception of a single affidavit by Admiral Elmo Zumwalt, it was entirely reasonable for the 5th Circuit to assume that “[t]he factual record before this Court presents the same relevant facts that were before the Second Circuit....”. *Miller, supra.*, 422,n.3. Although Manufacturers insist now that the 5th Circuit was reviewing a complete record, RSGCD82n.23, they were all defendants in *Miller*, have that record, and have had every opportunity to present evidence rebutting Plaintiffs’ repeated assertions about the deficiency of that record. A140,143-144; AI33-34, AS21-22. Here, unlike the civilians in *Miller*, Stephenson has offered a mountain of evidence.

If this court seeks guidance from any cases, it should be the ardently fought cases of *United States v. Vertac Chemical Corp.*, 841 F. Supp. 884 (E.D. Ark. 1993), *aff’d*, 46 F.3d 803 (8th Cir. 1995), *cert. denied sub nom., Hercules, Inc. v. United States*, 515 U.S. 1158, (1995), *rev’d on other grounds (damages) sub nom. United States v. Hercules, Inc.*, 247 F.3d 706 (8th Cir. 2001), involving Hercules, and *Maxus Energy Corp. v. United States*, 898 F. Supp. 399 (N/D. Tex. 1995) *aff’d* 95 F 3d. 1148 (1996), involving Diamond. Unlike *Miller*, these were hotly contested cases in which extensive deposition testimony and discovery was taken by both sides. The essence

of the rulings in these cases – that the Government did not control the manufacturing of Agent Orange at the Defendants’ facilities or the dioxin contaminant created by those processes -- belies Manufacturers’ contention that the government was somehow complicit in contaminating their final product. RSGCD95. Instead, both cases granted summary judgment *against* Defendants, concluding that at all times Manufacturers exclusively controlled their manufacturing processes. AI36-39.

The clearest demonstration that this is a fact-intensive inquiry is Judge Weinstein’s own external debate with himself. VA22-25. Manufacturers list his factual findings in *Stephenson*, while ignoring his contrary factual findings in *Ryan*, e.g., at 950: “Agent Orange was a mix of pre-existing chemical formulae” or that “[t]he government sought only to buy ready-to-order herbicides, not to cause, control, or prevent the production of the unwanted byproduct dioxin.” AI35.

Nor do Manufacturers explain how Judge Weinstein could finalize his holding after implicitly conceding that the fundamental premise upon which he decided *Stephenson* could not withstand scrutiny. In February 2004, he relied exclusively on Defendant Diamond’s statement of facts, because “[t]he facts supporting the government contractor defense are the same for each of the defendants.” *Isaacson* at

424.⁴ However, in November 2004, after Plaintiffs submitted their Motion for Reconsideration, which specifically rebutted each of his summary judgment factual findings and Defendants’ “attorney affidavits,” A7795-7942, Judge Weinstein reversed the entire premise of his February decision, stating “not all defendants had identical procurement contracts [or], knowledge of the dangers of contamination with dioxin of the various herbicides they supplied to the government...” 344 F. Supp. 2d at 874.

Manufacturers acknowledge that Dr. Janet Weiss concluded that their knowledge of the hazards of 2,4,5-T, and particularly its dioxin contaminant, was

⁴ Judge Weinstein’s selection of Diamond was inexplicable. Diamond was not a defendant in the *Stephenson* case, though the Stephenson Plaintiffs filed a motion to amend their complaint to add party defendants, including Diamond, given that the only defendants named originally when they filed *pro se* were Dow and Monsanto. In February 2004, Judge Weinstein denied Plaintiffs’ motion to amend in a ruling which clearly indicated that summary judgment was ultimately a foregone conclusion regardless of what the court said about Plaintiffs’ “due process,” 304 F. Supp. 2d at 442 -- “no new theory would override any new defendant’s government contractor defense” so an amendment would be “futile”. *Id.* Part of the Stephensons’ appeal seeks to reverse Judge Weinstein’s denial of their motion to allow them to add the same parties who are already Defendants in other *Agent Orange* cases. AS53-54. Indeed, Judge Weinstein’s dismissal order in Stephenson included all of the defendants, even though they were not parties to the Stephenson action! A13785-A13786. RSGCD75n.20 is equally curious. It is not “new claims” plaintiffs wish to add but “old” parties, the same parties as those who are being sued in other veterans’ lawsuits. Judge Weinstein’s denial of Plaintiffs’ motion to amend should be reversed.

superior to that of government officials, RSGCD124n.36, but ask this court to ignore her testimony by claiming that it “is inadmissible.” Defendants, however, did not move to strike any Plaintiffs’ expert affidavits in the court below, or seek any ruling on their admissibility. They have, therefore, waived any objections to this testimony on appeal. Any conceivable Rule 56(e) defects “are waived where, as here, no motion to strike is directed to them below.” *DeCintio v. Westchester County Medical Center* (2nd Cir. 1987) 821 F.2d 111, 114 (*per curiam*), citing *In Re Teltronics Services, Inc.* (2d Cir.1985) 762 F.2d 185, 192; see also *Ford v. New York City Transit Authority* (2d Cir.2002) 43 Fed.Appx. 445. “As best we have been able to ascertain, the courts that have considered the question are in unanimous accord.” *DeCintio* at 114.

The affidavits of Dr. Weiss, Dr. Ensley and Mr. Nash are in evidence, and each creates material issues of fact which render it impossible to grant summary judgment. Together, they present an overwhelming case against summary judgment.

Dr. Weiss' testimony, which Defendants acknowledge is "flatly inconsistent with" the “undisputed statement of facts” they submitted, RSGCD124n.36, definitely creates a genuine issue of material fact as to whether the government’s knowledge equaled that of Defendants who manufactured the contaminated 2,4,5-T. AI47-50. This alone requires that summary judgment be reversed. Yet, the district court completely ignored her affidavit. Doing so was clearly erroneous. See *Goodrich v.*

Betkoski (2nd Cir. 1996) 99 F.3d 505 ("[I]t is difficult for us to imagine an expert with more experience and knowledge in the hazardous substances field than [the doctor].... [W]e find his affidavit to be carefully researched, detailed, and directly relevant to this case." ... "[W]e believe the district court assessed the weight of conflicting proof and substituted its judgment for that of the jury." See *In Re Joint E. & S. Dist. Asbestos Litig.*, 52 F.3d 1124, 1133 (2d Cir. 1995) (applying the rule prohibiting such a practice.) This is particularly true since Manufacturers had years to proffer affidavits from their own experts but instead responded to Dr. Weiss with little more than affidavits by their attorneys.

Similarly, the unchallenged affidavits of Dr. Harry Ensley raise several triable issues of fact. AI46-47. Dr. Ensley explained that Manufacturers were aware that dioxin was formed during the conversion of tetrachlorobenzene into trichlorophenol at temperatures above 160° C. Despite knowing the extreme hazard of dioxin, Manufacturers produced trichlorophenol above this temperature in order to reduce their production time. This process was completely under Manufacturers' control and unrelated to the military's 2,4,5-T specifications. Without having objected to Dr. Ensley's testimony in the court below, Manufacturers summarily ask this court to disregard this scientific testimony within Dr. Ensley's area of expertise as a "legal conclusion." RSGCD90n.28. To the contrary, Dr. Ensley's testimony raises triable

issues of *fact*: 1) that dioxin was created as a result of a defect in Manufacturers' production process; and 2) that the specifications were not "reasonably precise," because they did not preclude Manufacturers from using safer processes but gave Manufacturers total control over the process which caused the defect.

Also unchallenged, but ignored by the court below, were the affidavits by Ralph Nash, Professor Emeritus of Law at George Washington University. AI45-46. He explained that the Agent Orange specifications were not 'reasonably precise' because they were performance specifications, telling the Manufacturers what the government wanted, rather than design specifications, which would control how the product was made. Manufacturers, therefore, had complete discretion to make a product for the government that was not severely contaminated with dioxin. Like Ensley's, Nash's affidavit raises genuine issues of material facts sufficient to require a jury to decide whether the specifications were reasonably precise.

**III. THERE IS NO EVIDENCE THAT ANYONE WHO
SELECTED, SPECIFIED OR EVALUATED HERBICIDES
USED IN VIETNAM HAD THE SLIGHTEST IDEA THEY
CONTAINED DIOXIN**

The "dioxins" are a "family" of 75 different chemical compounds with an identical carbon-oxygen framework. Each congener may vary dramatically in its toxicity, but 2,3,7,8-TCDD, ("TCDD," "TDD" or "dioxin") found in Manufacturers'

products is by far the most toxic and the only one classified as a known human carcinogen by the World Health Organization (1997 IARC Evaluation) and the United States National Toxicology Program (Report on Carcinogens Eleventh Edition. U.S. National Toxicology Program.).

The core of Manufacturers' argument is that at all times military officials ordered Agents containing 2,4,5-T, with knowledge they contained dioxin. This mantra is repeated without citation on no less than 26 times on the following pages: RSGCD3, RSGCD5, RSGCD10, RSGCD20, RSGCD35, RSGCD40n.11, RSGCD60, RSGCD65, RSGCD89, RSGCD94, RSGCD96, RSGCD102, RSGCD104, RSGCD105, RSGCD117, RSGCD121, RSGCD123, RSGCD124, RSGCD126, RSGCD127, RSGCD129, and RSGCD130.

There is absolutely no truth to this.

Yet, Manufacturers' own phrasing of the "Issues Presented" indicates that they concede that if just this one fact is in dispute, summary judgment cannot stand:

"Whether the GCD protects manufacturers of military defoliants against a claim based on the presence of dioxin contamination in a government-specified product, *where military officials ordered the product with knowledge of the presence of the dioxin*, after studying it and concluding that it presented no health risk. RSGCD5.

Even so, despite their persistent pounding of the table, Manufacturers cannot offer a shred of evidence that those Government employees who were actually involved in

the selection, procurement or evaluation of herbicides used in Vietnam had any idea those containing 2,4,5-T were contaminated with dioxin. RSGCD129-133. Not one deposition excerpt. Not one document.

a. **Edgewood and Fort Detrick Crops Division: The 2,4,5-T Selection Process**

Manufacturers emphasize that the decision to use defoliants came ultimately from President Kennedy but ignore the fact that the actual decision of which defoliants to use was made by technical, operational people. Brown, A5968-1. After the decision was made in 1962, daily operations of the herbicide program were delegated from the Cabinet level down to the General in charge of the American military operation in Vietnam (which at the time was only a few thousand Americans serving as advisors, not combatants) and the U.S. Ambassador there. A13026. New State Department guidelines issued May 7, 1963, further delegated authority “to approve (defoliation) operations to lower levels in the chain of command”.⁵ A7984-A7985.

⁵ The State Department also wanted the program to be reevaluated in a few months. That evaluation was conducted by Lt. Col. Peter Olenchuk. Olenchuk endorsed the continued use of herbicides without knowing anything about “dioxin,” chloracne or their relationship to 2,4,5-T. Olenchuk, A6363-2.

The ultimate decision regarding the selection of the herbicides belonged to General Fred Delmore, the commanding general of Edgewood Arsenal and the superior to every scientist there. Manufacturers denigrate both Delmore's testimony and authority, stating that he "was not a scientist." RSGCD35n.9. In fact, he taught chemistry at two colleges and had degrees in physical and organic chemistry. A8196-A8198. More importantly, it was Delmore who headed the original 1962 committee which recommended that the military use herbicides at all. Although Manufacturers attempt to minimize the role of Delmore's subordinates in the Crops Division, RSGCD41, they cannot deny that Drs. Brown, Minarik and Darrow were the ones who selected which herbicides were used. AS42-43. It is undisputed that neither they nor Delmore knew that dioxin was found in 2,4,5-T until 1970. AS42-44. Minarik, A6347-A6348, A6348-1; Delmore, A6073-A6074; Darrow, A6061-A6064.

According to Delmore, this choice did not require approval at any level above ARPA, well below Cabinet level. Delmore, A6068-1, A6068-2. Indeed, when the toxicity of the herbicides being used in Vietnam was re-evaluated as part of the "1968 Herbicide Policy Review," it was Minarik and Darrow who did so. A8287-A8291. That review failed to mention the existence of dioxin in 2,4,5-T – a fact well-known to the Manufacturers but, *even in 1968, still unknown* to Minarik or Darrow.

Manufacturers strain to elevate this decision *to the strategic level* above

General Delmore by twice stating that President Kennedy ordered evaluation of the toxicity of these herbicides, RSGCD24,42. Their only cite for this is not a high ranking official but a pathologist, Captain Herrero. RSGCD26. His entire testimony on this point is unadulterated hearsay:

I remember being told by people at Edgewood that this is something that President Kennedy ordered, high priority, and Cyrus Vance who . . . was secretary of the Army . . . had talked to people at Edgewood about it . . . McNamara was the Secretary of Defense, that those three people had some how put some personal input into getting it done. Herrero, RA1709. (emphasis added)

Vance and McNamara contradicted this hearsay. Vance denied ever discussing the issue of the potential toxicity of the herbicides with Secretary McNamara and also stated that if the chemical companies certified the chemicals as safe and non-toxic, the Defense Department would not normally do any independent work to double check the toxicity. Vance, A6455-1, A6455-2, A6457-1, 6457-2. Vance did not personally participate in the decision to use any specific defoliant in Vietnam, stating that the herbicide program was a very low priority in the overall conduct of the war. Vance, A6457-2, A6457-3. Another Under Secretary of Defense, Paul Warnke, corroborated Vance. Warnke, A6464-1, A6464-2, as did Secretary McNamara himself. In fact, McNamara never knew about the meeting to discuss the toxicity of 2,4-D and 2,4,5-T held at Edgewood on April 26, 1963, or that the Defense Department

personnel ever evaluated the toxicity of Agent Orange, McNamara, A6315-2,A6315-3,A6320-1. He had “absolutely no recollection of ever talking about defoliation to Kennedy”. McNamara, A6313.

This is in accord with General Delmore’s testimony that no one above him in the chain of command was responsible for the inquiry into the toxicity of these herbicides: “None. I was it.” Delmore, A6072 “The question is very simple, all I was interested in is, what it is the toxicity of 2,4-D, 2,4,5-T separately and together and what are the hazards, what is your determination as to the toxicity to human beings and domestic animals”. Delmore, A6068-3,A6068-4.

Once Delmore was advised that there was no toxicity problem, he simply relayed that information up the chain of command to Dr. James Gardner, who was Deputy Director of the Department of Defense Research and Engineering, reporting to Harold Brown, Under Secretary of Defense for Research and Engineering. Brown, A5963. Like Delmore and those below him, Gardner and Brown knew nothing of dioxin, understood the herbicides to be “ordinary weedkiller much used in the U.S. and elsewhere,” and believed that the safety of the herbicides was consistent with this common usage. Brown, A5964-A5965; Gardner, A6136-A6137-1,A6138-A6143-1.

Lacking proof that anyone with hands-on responsibility for the selection of

2,4,5-T containing herbicides “ordered Agent Orange with knowledge of the presence of dioxin,” Manufacturers attempt to impute that knowledge to a Delmore subordinate, Dr. Bernard McNamara, who passed away before he could be deposed. RSGCD25,RSGCD33. Defendants offer no evidence that Dr. McNamara, who was the head of the toxicology division in Dr. Van Sim’s Clinical Research Division, Jandorf , A10617-5 - A10617-6, and the chief toxicologist *assigned by Delmore* to the project, knew anything about the presence of dioxin in 2,4,5-T.

Lester Miller, the Chief Toxicological Researcher for Dr. McNamara, went through all of McNamara’s files after he died in response to a subpoena by the Defendants. Miller, A8085. Miller determined that Dr. McNamara’s files had no materials pertaining to dioxin other than materials generated in 1971 by his assistant, John Callahan. Miller himself never heard of dioxin until the early 1970s: “The first time I believe was ... the early 1970's. . . . I was made aware of that by Dr. McNamara because at the time, he wanted to know more about dioxin ... I believe at the time, he wasn’t even aware of the structure of the material, just the word dioxin.” Miller, A8087,A8088. Miller’s understanding was that Dr. McNamara *had just recently become aware of the term dioxin*. Miller, A8089.

Furthermore, Dr. McNamara’s *ignorance* of dioxin is supported by other evidence. At the time McNamara assigned Callahan to do testing on dioxin in 1971,

Callahan also had never heard of dioxin. Callahan, A5986-A5987, A5987-1-A5987-3. Harold McFarland, who conducted the toxicity testing for Dr. McNamara, never heard of dioxin before the late 1970's or early 1980s. McFarland, A8080-A8081. Nor had anyone else on the Edgewood task force. AS40-42 The same was true of McNamara's immediate superior. Dr. Sim, A6397:

A Let me make it perfectly clear. A, we were not aware that dioxin was in anything. That was number one from a medical stand point..... It was only after the fact that we learned that there was dioxin as contaminants.

Q. When did that after the fact

A. After 1970

Against all of this evidence, Manufacturers entire claim that McNamara knew of dioxin contamination beforehand rests on a selective deposition quote from Frank Vocci. RSGCD28. Vocci, however, also testified that he never discussed dioxin with McNamara until "the late sixties, early seventies, when it became known that dioxins were, indeed, a contaminant in 2,4,5-T." Vocci, A6462. Nor did Vocci hear about chloracne until the late 1960s. Vocci, A6463-5.

b. Fort Detrick – The Specification Process

After the decision was made to use 2,4-D and 2,4,5-T, the responsibility for working with the Manufacturers to prepare contract specifications went to the

Specifications Division at Fort Detrick. RSGCD21-22. It is undisputed that no one involved in drafting these specifications had any idea 2,4,5-T contained any toxic contaminants. Sinclitico, A6411; AB36.

c. The Air Force – Quality Assurance and Contract Compliance

In 1964, when the Air Force assumed responsibility for procuring herbicides, Wayne Vandeventer and William Crawford were assigned to prepare and enforce quality assurance specifications for the herbicides, A5384, including all those containing 2,4,5-T. Neither had any idea the Air Force was purchasing material containing dioxin. AB38; Crawford, A6051-1.

It was not until 1970 that Vandeventer and the other government employees dealing directly with the manufacturers first learned that Agent Orange contained dioxin. A6449-1,6449-4,A6454-1; AB38. Vandeventer wished Dow had told him about the presence of dioxin much earlier, as well as Dow's method of testing for it. Vandeventer, A6454-2,A6454-4,AB38.

d. Manufacturers Supply No Documents or Deposition Testimony Indicating That Any of Their Employees Told Anyone Involved in the Selection, Specification or Quality Control Process that Dioxin was a Contaminant of 2,4,5-T

Fourteen employees of Diamond, thirty-five employees of Dow, thirteen

employees of Hercules, and twenty-seven employees of Monsanto were deposed in MDL 381. While Manufacturers argue that they informed the government of dioxin and its toxicity, RSGCD119-123, they cite no deposition testimony from any of their employees saying that they informed anyone in the selection, specification or quality assurance process that dioxin was found in 2,4,5-T.

Instead, Manufacturers' employees kept their knowledge of dioxin secret from the government employees they regularly dealt with: neither David Porter, Dow's Manager of Government Relations, who knew Minarik, nor his colleagues at Dow told anyone in the government about dioxin, A8108-A8109; Cecil Russell, Monsanto's Director of Product Quality, wrote the 2,4,5-T specifications for the military and was in frequent contact with them but never told them that the product contained dioxin, A8144,A8145,A8146-A8148; James King, Diamond's Sales Manager, never told anyone in government and didn't know anyone at Diamond who did, A6279-2,A6279-3,A6280-1,A6280-2,A6280-3; Diamond's Chonoles never told anyone in the army that 2,4,5-T contained dioxin, A6017-1; Milton Taves, Hercules' Research Manager of the Synthetics Research Division (which included 2,4,5-T) never communicated about dioxin with anyone in the government, A8179-A8180; and John Eagan, the director of Hercules' Synthetics Research Division, testified Hercules never advised anyone in the government that 2,4,5-T contained dioxin.

A7997,A8002,A8003.

IV. MANUFACTURERS FAIL THE FIRST PRONG OF BOYLE; THE CONTRACTS WERE NOT PRECISE, PARTICULARLY AS TO THE FEATURE PLAINTIFFS' CLAIM TO BE DEFECTIVE – NEVER MENTIONING DIOXIN AT ALL

The Manufacturers assert:

“Plaintiffs ask this Court to adopt a wholly unprecedented rule that the government contractor defense is unavailable where the contract is silent as to the alleged defect (here, the presence of trace amounts of dioxin) – even where the government specifically considered that feature of the product and determined that the product was safe for its intended use.”
RSGCD66

The government did not consider dioxin in the course of preparing any contracts. The government never “determined” that 2,4,5-T severely contaminated with dioxin was safe.

Further, Manufacturers misunderstand what *Boyle* requires. The ‘reasonably precise design specifications’ requirement is independent of the “knowledge” prong. Even if the government had considered “dioxin,” the denial of summary judgment is still mandated by this court’s holding in *Grispo v Eagle Picher Industries*, 897 F. 2d 626 (2d. Cir 1990). There, even though the government was aware of the defect, the failure to warn, the dangers posed by that defect, and still continued to order the asbestos product, the government contractor defense remained a question of fact for

the jury. As the *Grispo* court concluded, even if “the Government made a discretionary decision not to warn those working with asbestos at our nation’s shipyards during World War II of the hazards of asbestos, [t]hese allegations do not at all indicate that the Government controlled or limited the ability of contractors like Eagle Picher themselves to warn those who would come into contact with its product”. *Grispo* at 632. Further, it is not enough to show that the Government considered a defect; the contractor cannot escape liability unless the government also “limited the contractor’s ability to accommodate safety in a different fashion”. *Lewis v. Babcock Industries, Inc.*, 985 F.2d 83, 87 (2d Cir. 1993) quoting *Grispo*. Here, it is undisputed that nothing in the specifications precluded Manufacturers from using the Boehringer process or reducing the temperature of their reaction.

Manufacturers’ argument also contradicts *Boyle*. Under Manufacturers theory, rather than provide a defense only when “the Government made me do it”, contractors would evade liability unless “the Government told me *not* to do it.” RSGCD90-91. This would require the government to constantly police its contractors and rewrite specifications before they can be held accountable for their own negligent conduct. *Boyle* is appropriately far more limited, intruding on state law only when there is an inconsistency between government contract *requirements* and state tort law. *Boyle* at 508. (See also *Spriestma v. Mercury Marine*, 123 S. Ct. 518 (2002), noting that the

lack of action on the part of the government is not enough to trigger preemption regardless of the government's knowledge.)

Furthermore, Manufacturers' argument that summary judgment is warranted because the government "knowingly" ordered 2,4,5-T tainted with dioxin cannot be reconciled with the examples given in *Boyle*. Defendants' brief completely fails to address either hypothetical advanced by the *Boyle* court, and with good reason – in both of them the Government could order a product knowing it lacks a safety feature, but the contractor could still not invoke the defense.

In one, AS11, the Court hypothesizes that the government specifies only the cooling capacity of an air conditioner but not the precise manner of its construction. Even if the government knowingly ordered the product without a certain safety feature, so long as "the contractor could comply with both its contractual obligations and the state-prescribed duty of care ... no one suggests that state law would generally be pre-empted." *Id. at 509*. But here, Manufacturers never even argue that they could not comply with both government specifications and their "state-prescribed duty of care" to guard against dioxin contamination. Manufacturers admit that the specifications, which were designed to fit their production requirements, AB35-37, did not affect the amount of dioxin in the final product. RSGCD110; Dow's Holdeman, A6198-A6199; Monsanto's Russell, A8149-A8150.

Manufacturers' final argument seeks to turn their responsibility for providing information to the government on its head by arguing that requiring contractors to actually document the government's consideration of the safety feature would impose "impossible" burdens on the contractors and drive them into bankruptcy. RSGCD66. Such a rule only deprives them of summary judgment and, in any event, only places responsibility where it lies. Where the contractor is responsible for the defect, the contractor should pay. Where the government is responsible for the defect, the contractor should not. Where the facts are ambiguous because the contract specifications are ambiguous, the resolution is for the jury.

Lewis v. Babcock Industries Inc., 985 F. 2d. 83 (2d Cir. 1993) adheres to this rule. *Lewis* addressed a situation where, after the F-111 at issue had been put into use, the Air Force became fully aware of the corrosion problem that ultimately became the subject of the lawsuit. To better protect the cables, the Air Force deliberately changed its maintenance manual and replaced the existing cables with new ones of the same material. This court held that by doing so, the government exercised its discretion over the composition of the cables so as trigger the government contractor defense against the claims of a serviceman who was injured when one of the new cables failed. Significantly, there is nothing in *Lewis* to suggest that had the serviceman been injured before by one of the original cables and not one

of the reordered cables that the government contractor defense would apply. Such a ruling would effectively allow the contractor to escape liability for events which occurred before the government exercised its discretion over the defect. Moreover, the *Lewis* court went further and did not even apply its holding to accidents which occurred after the government became aware of a defect but before the new cables were installed: “we do not decide whether the contractor can invoke the military contractor defense where the Government merely tolerates a defect through continued use of a product in the face of knowledge of a design defect acquired after design stage ended”. *Id.* at 89n.3. Moreover, here, unlike *Lewis* where the military knew of the issues raised by the composition of the cable and specifically re-ordered cables with that composition, there is no evidence that anyone involved in preparing, negotiating, or monitoring Manufacturers’ contracts knew they were ordering or re-ordering dioxin-contaminated 2,4,5-T.

Manufacturers also insist, incorrectly, that the Government’s procurement specifications were so precise that they “left” them “with little latitude”. RSGCD84. The specifications only described physical properties, such as specific gravity, moisture content, acid equivalents and free acid, while listing only the maximum overall tolerance for impurities and leaving the types of impurities to the discretion of Manufacturers. See Affidavit of Mark Cuker, A3935-A3952; Professor Nash,

A6989-A7000; Dr. Ensley, A3953-A3966; AB43. Given that Manufacturers' own employees contradict their representations at RSGCD22 by testifying that there was no difference between the government's specifications for the 2,4,5-T in Agent Orange and the specifications for their commercial 2,4,5-T products, (Dow's Holdeman; AB24; Diamond's King, A6280-4; Monsanto's Russell, A8145). Manufacturers' complaints regarding "latitude" ring hollow. See RSGCD110.n31.

While Agent Orange has been popularly described as a 50% 2,4,5-T/50% 2,4-D product, it actually contained from 41.29 to 49.5% 2,4,5-T, the balance being impurities. Air Force Materials Lab Technical Report. A6708-A6720. There were up to 23 different impurities, which varied from supplier to supplier, but the Government could not identify *any* of them. A6734-A6735; AB39-40.

This ignorance gave manufacturers even more latitude than they had with their commercial customers. "The standard assay for technical grade 2,4,5-T is a simple titration to give the acid equivalent of the product. On this basis, most manufacturers market a product that has 97 to 98% acid equivalent. . . The Department of Agriculture reported that the content of 2,4,5-T was often as low as 85% in commercial materials that meet the 97% acid equivalent specification." A8227-A8229. By contrast, the DOD required only 80-82% acid purity. RSGCD85.

Furthermore, in arguing that the government assumed there would be "trace

amounts of dioxin” in the 2,4,5-T they were selling, Manufacturers ignore the fact that they knew the government had absolutely no understanding of how to test or inspect for dioxin. Hercules’ Eagan, A8000-A8001; Hercules’ Taves, A8181-A8182; Monsanto’s Russell, A8153, A8154. They even gloated over the Government’s inability to ascertain the full extent of the impurities in their products. A Hercules internal memorandum noted: “I don’t believe [the government] laboratory has analyzed our product by any means other than infrared. They apparently are not aware of the other components which we know to be present.” A8320-A8323. By contrast, all of the Manufacturers routinely, but secretly, tested their products for levels of dioxin contamination. AB37-38; Hercules’ Taves, A8178; Hercules’ Eagan, A7996; Monsanto’s Russell, A8143; Owin Dolin, Monsanto’s chief chemist, A7989. Diamond’s Guidi, A10663-1. However, it was not until 1970 that the Government’s quality assurance officers even knew about the existence of dioxin or the techniques developed by Manufacturers to test for it. Vandeventer, A6449-1-A6449-2; A6449-4-A6449-5; AB38.

Dow used its private tests to develop an internal specification of 1 ppm for its 2, 4, 5-T product without conveying that specification to the government. AB37-38. Given this, Manufacturers’ assertion that the government’s specifications were designed to permit a certain level of dioxin impurity makes no sense. Even a true

98% pure 2,4,5-T product, the highest level of 2,4,5-T purity ever requested by the government, would theoretically allow dioxin contamination of 2% or 20,000 parts per million dioxin – a truly lethal dose which would be 20,000 times Dow’s internal specification. Clearly, under no circumstances could the Government have actively considered its purity levels to be a tolerance for the dioxin impurity.

The simple fact is that the government’s specifications had absolutely no effect on dioxin content. The specifications left it to the Manufacturers’ discretion as to how they would produce 2,4,5-T. (*See* Affidavits of Dr. Ensley, A3241-A3243, A3953-A3966)

V. SUMMARY JUDGMENT MAY NOT BE GRANTED AS TO THE MASSIVE AMOUNTS OF 2,4,5-T SHIPPED PURSUANT TO MISSING CONTRACTS

Although Manufacturers argue that it is irrelevant they have never been able to produce many of the contracts on which they base their defense, RSGCD133-134, AB38-39, it is Manufacturers’ burden to prove that a contract’s specifications are reasonably precise. Not only were the contractual documents different among the Manufacturers, there were different contracts for each defendant. Some contracts incorporated military specifications; others did not. Purity requirements and marking specifications varied. *Aff. and Supp. Aff. of Mark Cuker, A3935-A3952, A5449-*

A5462.

It is impossible to determine what, if any, specifications were imposed by the missing contracts. Manufacturers have not attempted to do so. Instead, Manufacturers errantly rely on two cases, *Skyline Air Services, Inc. v. G.L Capps Company*, 916 F.2d 977 (5th Cir. 1990) and *Smith v. Xerox Corp.*, 866 F.2d 135 (5th Cir. 1989). In each case, however, even though the contractor did not produce the actual contract, the contractor produced detailed affidavits from employees describing precisely what the contracts contained. *Skyline* at 978-979; *Smith* at 138. By contrast, Manufacturers do not cite to *Westmiller v. IMO Industries*, 2005 WL 2850334 (W.D.Wash.2005), which is directly on point. There, where the contractor failed to produce detailed affidavits, which precisely specified the contents of the contract, removal under §1442(a)(1) was not appropriate. The court found that the defendant failed to prove even a colorable government contractor defense, striking the contractor's affidavit about specifications on the grounds that it violated FRE 1002, the 'best evidence' rule, and holding that "absent the actual specifications," mere conclusory statements about what the specifications would have been were not admissible. *Id* at *5.

Here, all Dow stated about its missing contracts is that they “contained specifications provided by the military which described the specific composition of

those phenoxy herbicides”. A2332-A2333. Diamond’s only description of its missing contracts are that they “required the production of an herbicide composed of approximately 50% n-butyl ester of 2,4-D, 30% n-butyl ester of 2,4,5-T, and 20% iso-butyl ester of 2,4,5-T” as well as the contract providing for 50% n-butyl ester of 2,4-D and 50% of n-butyl ester of 2,4,5-T. A1147-A1148. Hercules made no effort to describe the specifications which form the basis of its four missing contracts except to say that they involved “the production of certain compounds containing esters of 2,4-D and 2,4,5-T”. A180.

Thus, Manufacturers essentially argue that *any* contract which specified 2,4,5-T is, as a matter of law, reasonably precise under *Boyle*. Such a rule, based solely on the *ipse dixit* of the Manufacturer, would grant immunity to any contractor that merely provides a material requested by the Government and then loses its contract, nullifying the “reasonably precise specification” requirement of *Boyle*.

VI. FAILING TO SHOW THAT ANYONE IN THE GOVERNMENT RESPONSIBLE FOR THE SELECTION, PROCUREMENT, OR INSPECTION OF 2,4,5-T WAS AWARE OF DIOXIN, MANUFACTURERS CANNOT IMPUTE KNOWLEDGE TO THEM FROM ELSEWHERE IN THE GOVERNMENT

In the absence of any knowledge of dioxin among those responsible for evaluating, selecting, specifying, procuring or inspecting 2,4,5-T for use in Vietnam,

Manufacturers struggle to impute the knowledge of other government employees to them, regardless of how remote in time, place or function these employees were from selecting, specifying or contracting for defoliant use in Vietnam. Manufacturers do admit that the people making the decision to select 2,4,5-T for Vietnam cannot be charged with the knowledge of every single government agency – that they must be “closely linked” and “engaged in a mutual venture.” RSGCD133. Indeed, Manufacturers do not dispute that the law requires this, but they cite to no one who had the necessary information and was “closely linked” to them.

That the knowledge of a few officers cannot be imputed to the entire military is demonstrated in *Burke and Herbert Bank and Trust Company v. United States*, 107 Ct. Cl. 106, 67 F.Supp. 827 (1946) where the Court of Claims discussed imputed knowledge in the context of a patent dispute. The plaintiff in that case sought to impute notice of a patent assignment to the War Department, because it had been left with two officers of the Chief of Staff of the Army. In refusing to charge this knowledge to the War Department, the court stated:

In 1919 . . . there were in the United States Army thousands of officers. Their duties were many and varied. Some were connected with the conduct of military campaigns in the field; others with transportation of supplies; others with the gathering of military intelligence; others with patenting of inventions of military value, etc., etc., etc. *Notice to one of these officers of some fact relating to a branch of which he was not connected is not and should not be notice to that department, binding on it in future transactions.* 67 F.Supp. at 830. (emphasis added)

In the 1960's, when the Vietnam War took place, the military (to say nothing of the U.S. Government in general) was enormously larger and more dispersed than it was in 1919. What was true in the *Burke* case is true many times over in this case.

Assuming *arguendo* that a remote government employee incidentally learned that dioxin was a contaminant of the 2,4,5-T manufacturing process, this could no more be charged to the particular members of the Defense Department that were actually responsible for selecting, specifying and monitoring the Manufacturers' herbicides than the letter to the Army Chief of Staff could be charged to the War Department in *Burke*. Here, although Defendants took hundreds of depositions, they are only able to cite to the testimony of three individuals, all related to Weldon Springs, who even knew two of the three facts critical to the "knowledge" prong of *Boyle*: 1) that 'dioxin could result from Manufacturers' 2,4,5-T production process; and 2) that 2,4,5-T was being sold for use in Vietnam. But even then, none of these three knew the third critical fact: 3) that dioxin was found in the end product being sold to the government. Moreover, after reviewing millions of documents, Manufacturers identify no Government documents that contain all three of these facts.

Instead, Manufacturers use the high visibility of Agent Orange after the war to imply that the herbicide program was such a high priority during the war that

military personnel in far-flung departments must have been actively discussing it. The fact is that defoliation was one of thousands of projects the military was responsible for during the Vietnam war. As stated by Fred Edwards, the ARPA project manager actually responsible for defoliation:

I can't stress too strongly my belief then and my belief now that this wasn't a high priority project... It had no more priority -- let me finish the statement. At the same time I took over this series of research projects, I also took over a project, not a very elegant one, defined something that would contain the Vietnamese soldier's ketchup... I'd like you to try to get, or have I established the fact this wasn't a high priority. It was one of hundreds.

Edwards, A8006 - A8006-1.

a. Edgewood Arsenal (“Edgewood”)

Manufacturers devote 17 pages to creating the illusion that the far-flung Edgewood Arsenal had a wealth of knowledge about the dioxin contamination of 2,4,5-T. RSGCD 24-41. This is devoid of truth.

Edgewood was a multi-location entity with more than 10,000 people responsible for all of the military's biological and chemical programs. A8197. The following are just some of the Divisions and Branches that existed under the vast “Edgewood” umbrella: the Clinical Research Division (CRD), Sim, A6395-1; Chemical Research and Development Laboratories (*Id.*) which supervised the committees described as RPI, RPII, and RPIII, Sim, A6395-2-A6395-3; the

Department of Installation and Logistics, Stanwix-Hay, A6413; the Specifications Division, Sinclitico, A6399-1; the Weapons Development Engineering Labs, Jefferies, A6250-A6251; The Industrial Liaison Office/Industrial Liaison Program, Hebbeler, A6161-1; the Biochemical Research Division, including its Enzyme Chemistry, Chemotherapy, and Sanitary Chemistry branches, Biochemical Research Laboratory, Pharmacology Research Division, Clinical Research Division, Toxicology Division (under Dr. McNamara), and Physiology Division within the Medical Laboratory; Chemical Research Division, including separate Analytical Chemistry, Chemical Research, Biochemistry, Physical Chemistry, and Organic Chemistry Division, as well as a Toxicity Screening Branch, Jandorf, A10617-1 to A10617-10; Agents Research Branch, Horton, A6237-1; Weapons System Laboratory; Munitions Division, Jandorf, A10617-11; Chemical Systems Laboratory, including its Sections of Organic Chemistry, Physical Organic Chemistry, and Air Purification Chemistry, Simmons, A6397-1-A6397-4; Chemical Research Lab and Development, including its Medical Division and Toxicity Screening Branch, Sultan, A6426-1; Chemical Corps Procurement Agency, Fredericks, A8015; Office of Chemical R&D; and Army Research Office, Life Sciences Division, Morthland, A6352-1.

The vast bulk of the personnel at Edgewood worked on developing chemical

and biological weapons which would quickly kill or incapacitate enemy personnel in warfare. Their work sharply contrasts with the work of the tiny Crops Division that developed growth regulators and herbicides as an adjunct to military operations. However, by dealing with Edgewood as a unitary entity, Manufacturers attempt to satisfy the “government knowledge” prong of *Boyle* as a matter of law merely because on sporadic occasions in Edgewood’s history, disparate scientists, who were not a part of the Crops Division but were working on anti-personnel chemical weapons, learned something about the toxicity of TCDD in the course of evaluating literally thousands of potential chemical agents. RSGCD33. However, these same personnel quickly ruled TCDD out as a chemical warfare agent, because it did not quickly incapacitate or kill the enemy. None of these personnel ever associated dioxin with any herbicide being purchased by the military for use in Vietnam (See *infra* at 37-39) even if they happened to learn that the Crops Division at Fort Detrick had selected 2,4,5-T as a chemical to use in defoliation. Indeed, none of Edgewood’s documents which mention dioxin also mention 2,4,5-T and those mentioning dioxin only indicate it was worthless as a chemical agent. Poor, A8101-A8102:

The records we’ve seen on dioxin, no indication whatsoever that the dioxin work, that was looked at here had any connection with herbicide interest in the Army. And the dioxin records that were found were very – either isolated in the toxicology division or in the organic branch of the research division, two very small areas. Poor, A8103.

Manufacturers' other Edgewood argument is based on the fiction that a report by Hoffman notified Edgewood personnel that dioxin was a toxic contaminant of 2,4,5-T. (RSGCD34, citing June 5, 1970 Jandorf, Memo to Director of Research Laboratories, RA2343-2344; and testimony of Horton, Jandorf, Summerson, Simmons, Sultan, and Sim.) Hoffman's report is over 30 pages long and discusses dozens of chemicals of potential interest to the U.S. Army Chemical Corp. RA2342h-2342aj. However, the word "dioxin" appears nowhere in the report. Vocci, A6463-1 to A6463-4. (Compare Krohley Ex 21 (retyped version) RA2342g with Krohley Ex. 22, RA2342v-2342w (actual version)). Nor does the report say anything about the presence of dioxin, or any other contaminant in 2,4,5-T. It only talks about the presence of a toxic contaminant in perchloronaphtalene, which was not a herbicide at all but a wood preservative!

Manufacturers' Hoffman excerpt describes the deaths of workers in the wood preservative plant due to liver disease, listing eight bibliographical references at the end of the report. Manufacturers' entire argument then assumes, *without any supporting evidence*, that readers of the Hoffman trip report would be diligent enough to go to the eight references, read them, including the misnamed "Kinnig and Schulz" article,⁶ and then remember that four years later when an entirely different branch of

⁶The correct cite would have been to "Kimmig" and Schulz.

Edgewood decided to consider the use of herbicides in Vietnam. Manufacturers' house of cards is undermined by the fact that none of the transcripts cited by the them states that *anyone* on the Edgewood Task Force actually read the referenced article, much less that they remembered it years later. AS40-41. Indeed, a review of Dr. McNamara's files found neither a copy of Hoffman's report nor the referenced article. Miller, A8084-A8086.

Manufacturers' final claim about Edgewood is that "undisputed documentary and testimonial evidence makes clear that key people at Edgewood, including" Drs. McNamara, Sultan, Whitten, Simmons and Jandorf knew dioxin was in 2,4,5-T even before 1962. *RSGCD35*. The undisputed documentary and testimonial evidence is *precisely to the contrary*. While Dr. McNamara's lack of knowledge has already been discussed and Whitten passed away before he could be deposed, the testimony cited for Sultan, Simmons and Jandorf simply references their knowledge of the Hoffman report, not the bibliographical references. None of the three knew anything about dioxin being a toxic contaminant of 2,4,5-T. Sultan learned from Dr. Hoffman that dioxin was in a wood preservative but did not hear about it again until 1976. A6427. Jandorf neither knew dioxin was in 2,4,5-T nor was he aware of any work concerning 2,4,5-T undertaken at Edgewood prior to 1970. A10630, A6248. Simmons was not aware of Edgewood work on 2,4,5-T prior to 1970. A6398.

Indeed, after reviewing Dr. Hoffman's trip report, Simmons saw no literature on dioxin in it and was aware of no further research about it until he saw it in the newspaper! Simmons, A6397-5-A6397-8.

This pervasive ignorance about dioxin, chloracne and 2,4,5-T was echoed by Robert Poor, the Edgewood attorney who was in charge of the document search in response to massive subpoenas from Manufacturers. Poor noted that Hoffman's 1959 report was not even filed under "herbicides" or "dioxin" but simply filed generically with "Trip Reports." In response to Manufacturers' assertions regarding the importance of this isolated report, he succinctly testified: "[W]ho would ever think to look in a trip report from 1959 for something on dioxin? Nothing would ever lead you there." Poor, A8100.

Manufacturers next argue that the "Edgewood task force played a critical role in addressing [toxicity]," RSGCD41 (see also RSGCD26,36-41). However, there is no evidence that they analyzed dioxin toxicity or learned about reports of chloracne and hepatotoxic effects in Manufacturers' employees. Not a single document referred to by Manufacturers in their Edgewood exhibits, including the minutes of the Edgewood task force conference, contain the word "dioxin" or even "chloracne." RA2366-2380. Eighteen government scientists were on the task force, but Manufacturers do not identify a word of testimony from *any* of them showing

contemporaneous knowledge associating either dioxin or chloracne with the 2,4,5-T being sold to the government for use in Vietnam. Nor did any of them gain this knowledge before 1970 (or 1969 in the case of Shaw). (See AS40-41, referencing the testimony of task force member General Delmore and task force chairman, Colonel Bauer; Dr. Shaw, A6380, A6384; Dr. Summerson, AS41; Dr. Minarik, AS42; Dr. Leary, AS41; Dr. Morthland, AS41; Captain Herrero, AS41; Vocci, A6462; task force observer Wills, A6514; Seymour Silver, AS41; John Callahan, AS41; and James Gardner, AS41.) This lack of knowledge extended to others at Edgewood. For instance, Richard Horton, a toxicologist, also could not say that he ever heard of dioxin before 1970. Horton, A6233, A6234.

Lastly, Manufacturers imply that the Edgewood personnel who reviewed “the confidential central toxicity files of the U.S. Department of Agriculture,”⁷ RSGCD28, hit the dioxin jackpot, but their testimony is that after spending an hour or so “browsing” through files, they found nothing about dioxin or chloracne and 2,4,5-T. Leary, RA1800-1801. Indeed, there is no evidence that the Edgewood Task Force’s review of any scientific literature uncovered a relationship between dioxin, chloracne and 2,4,5-T. Morthland, A6356-1, A6356-2, A6358-1. When Cox and Jefferies went

⁷ Although defendants attribute this research to “Dr. McNamara,” RSGCD28, Leary only testified to research performed by a “Dr. McDonald”. A6281-1-A6281-2.

through Edgewood materials years later in preparation for the Weldon Springs project, they still found nothing there on dioxin. Cox, A6027-1-A6027-2; Jefferies, A6253.

b. The President's Science Advisory Committee ("PSAC")

Chaired by the President's Science Advisor, PSAC provided scientific advice to the President. McRae, A6322. There is no evidence that PSAC actively considered the toxicity of 2,4,5-T as a herbicide in Vietnam until late 1969, Hornig, A6230, over a year after the last Agent Orange contract was issued. Before that, the Committee, which only met about 10 times a year, merely received briefings from the military on various issues. In receiving these briefings, PSAC was not a decision-making body. A5940. It operated mainly through investigatory panels which focused on problem areas, and then would write a report. A6205; A6084-A6085; A5936. During the 1960s, PSAC's attention was primarily devoted to atmospheric nuclear testing. Hornig, A6230. Comprised of about 20 people, PSAC's sole function was to listen and ask questions. Hornig, A6209-A6210, A6219-1.

Based upon fragments of testimony from just three PSAC members, Wiesner, MacDonald, and Hornig, one assistant who worked with PSAC, McRae, and no documents, RSGCD43-45,121, Manufacturers assert that PSAC was fully aware that "dioxin" was in 2,4,5-T and acted for President Kennedy in approving its use. RSGCD43-45. There is no evidence to support this. In claiming that President

Kennedy asked PSAC to “distill” the scientific evidence about the toxicity of herbicides being used in Vietnam, Manufacturers cite neither a written request from President Kennedy nor any report back to him. The fact is that neither Presidents Kennedy nor Johnson charged PSAC with making any recommendations regarding the use of herbicides in Vietnam. See testimony of PSAC members Doty, A6088,A6095-A6096; Baldeschwieler, A7966; Hornig, A6209-A6210.

Manufacturers cite to Edgewood’s May 1963 briefing of PSAC as the seminal event evidencing PSAC’s authority. RSGCD42-43. By the time of those briefings, however, Secretary McNamara and President Kennedy had already approved the defoliation program without any knowledge of dioxin or chloracne. McNamara, A6312,A6316. Furthermore Jerome Wiesner, who served as PSAC chairman from 1961 to 1964, stated that none of his responsibilities involved the Vietnam War. Nor did he advise any President about herbicides. Wiesner, A6467-A6468, A6477-A6478, A6481-A6481-1, A6481-2-A6481-3, A6483, Nor do Manufacturers have any evidence to support their assertion that “[t]he Government knowledge *on which defendants rely* was passed directly from the Edgewood scientists who conducted the research to President’s top science advisors [PSAC].” RSGCD130. The tentative agenda for the

May 9, 1963, meeting set aside only *one hour* for the discussion of defoliation.⁸ Edgewood task force Conference Minutes, A4771-A4781. None of the scheduled speakers during the one hour defoliation presentation, General Delmore, Dr. McNamara or Dr. Minarik, knew anything about the presence of dioxin in 2,4,5-T. AS42-44. Neither did Dr. Gardner, who gave the introductory remarks nor other presenters from the military at the meeting, such as Dr. Silver and Dr. Housewright. AS41. In fact, while many witnesses did not even recall that the meeting took place, (See, e.g., Delmore, A6071-1; Doty, A6083-1, A6089-A6090, A6092), those who did recall the meeting testified that dioxin was never mentioned. Morthland, A6356-3; Minarik, A6348-2. The words “dioxin” or “chloracne” do not appear in any minutes of the 1963 meeting. RA2381-RA2440.

Far from fully inquiring into the toxicity of 2,4,5-T, on May 9, 1963, PSAC merely accepted Delmore and Minarik’s decision, also relying on the alleged commercial record: “Since 1947, more than three-hundred million pounds have been produced and used to control vegetation on more than four-hundred million acres of land in the United States.” A4774; AS44.

⁸ A second version of the agenda states this was merely a briefing for the Biological Warfare Chemical Warfare Sub-Panel of the PSAC Limited War Panel. A8020 This is consistent with the recollection of Dr. Hornig, who noted that the Pentagon commonly referred to briefings of the full PSAC when in fact it meant panels of PSAC. Hornig, A6214-A6215

To the extent that PSAC ever discussed any herbicides at all before 1969, it was mainly by a panel on the Use of Pesticides formed in response to Rachel Carson's book about DDT, *Silent Spring*. Wiesner, A6469-A6470; Hornig, A6223; Doty, A6082. That panel simply interviewed witnesses for approximately four (4) to seven (7) days, completing its work by May 15, 1963. Doty, A6081-A6082, A6094. 2,4-D and 2,4,5-T were only discussed as part of a general evaluation of the persistence of chemicals in the environment due to extensive domestic use. Tukey, A6439-A6440 The use of chemicals in Vietnam was never considered. Tukey, A6439-A6440; Hornig, A6212.

Manufacturers quote testimony from Dr. Wiesner that in 1962 or 1963 someone at one of these meetings was told by an unidentified Dow employee that dioxin was possibly a trace chemical residue from the manufacturing process of 2,4,5-T. RSGCD44. When asked for particulars, Wiesner could only say that the employee was engaged in a conversation with someone in the room while the meeting was breaking up. There is no way to know whether Wiesner merely overheard a conversation between one of the Dow attendees and another Dow attendee or someone from another chemical manufacturer, but Wiesner makes clear that dioxin was never mentioned by Dow as part of any presentation or official document. Wiesner, A6471-A6474. Moreover, Wiesner is the only person who testified to this private conversation. Wiesner himself had no idea the conversation could relate to herbicide use in Vietnam,

as he didn't become aware of that use until he read about it in newspapers years after leaving PSAC. Wiesner, A6478, A6484. Similarly, pesticides panel member Tukey didn't learn that any herbicides addressed in the pesticide study were being used in Vietnam until a separate panel on herbicides was formed in 1969. Tukey, A6441,A6445,A6446-1. See also the testimony of PSAC member Doty, A6083-1,A6089-A6090.

Other than the agenda from the May 9, 1963, meetings and its minutes, Manufacturers present no documents related to PSAC involvement with herbicides until the Bionetics report came out in 1969. There were none. To show that PSAC nonetheless had an interest in the subject, Manufacturers selectively quote excerpts of testimony from Dr. Hornig, President Johnson's Science Advisor, 1964-1969. The cited testimony says only that Dr. Hornig "learned" between 1964 and 1966 that dioxin was "an impurity in 2,4,5-T." Hornig, RA1722-1723. But Hornig's answers to similar questions make Manufacturers' snippet meaningless: [He] "cannot be absolutely sure of anything;" Hornig, A6228; "I have no specific recollection;" Hornig, A6228; "I was told at some point in time, which I can't recollect..." Hornig, A6231. And he testified that he did not learn that dioxin was associated with chloracne until after he left Washington. Hornig, A6211-1-A6211-2,A6222-1.

Moreover, Hornig *was* sure that the defoliant program in Vietnam *was never* a

subject of focus for PSAC, Hornig, A6209-A6210, and he did not recall members of PSAC ever discussing the presence of dioxin in 2,4,5-T. Hornig, A6203, A6211, A6217-6219. Nor did he recall any briefings before PSAC by members of the military about the toxicity of herbicides in Vietnam. Hornig, A6203, A6213. In fact, Dr. Hornig testified that PSAC received periodic reports on the progress of the war in Vietnam but the defoliation program was never identified as a subject of focus. Hornig, A6203,A6209-A6210,A6217-A6220. Similarly, Frank Westheimer, PSAC member from 1967-1970, recalled no discussions concerning the use of herbicides in Vietnam or the potential adverse health effects of 2,4,5-T. Westheimer, A6487, A6488-A6490,A6493-A6495,A6497-A6498.

Manufacturers respond to this by stating that according to Dr. MacDonald the toxicity of 2,4,5-T was discussed by a “biological/chemical warfare” *subgroup* of PSAC between March and July 1965. RSGCD44. MacDonald, RA1814-1819, RA1820-1823; Hornig, A6207-A6208. However, Dr. Melvin Calvin, a Nobel Prize winner, who was appointed to PSAC in 1963, served on the Board of Directors of the Dow Chemical Company from 1964 until 1966, and chaired that subgroup, clearly testified that there were no discussions about either dioxin or 2,4,5-T during the entire time he was a member of PSAC. Calvin, A5991-A5993,A5995-A5998,A6002,A6003,A6005-A6012. Manufacturers attempt to limit the impact of

Calvin's testimony by taking one line out of context, RSGCD46n.12, but his testimony is clear: "That question he just asked has been answered 15 times already. I told him *I've never discussed, to my knowledge, herbicides in the PSAC ...* .it was never discussed in the formal session of the committee to my recollection at any time, at any point." Calvin, A6011-1, A6012. See also A6011. Even Dr. MacDonald testified that there were never any discussions about the health effects of 2,4,5-T before 1969, nor were any reports produced. MacDonald, A6304-A6306.

Calvin's testimony is corroborated by William McElroy, a fellow member of the "biological /chemical warfare" subgroup who MacDonald thought was present when dioxin was discussed. McElroy denied learning that dioxin was present in 2,4,5-T before the 1980's. McElroy, A8307,A8308.

Lastly, Manufacturers argue that Vincent McRae, technical assistant in the Office of Science and Technology, indicated that some again unspecified member of PSAC told him that dioxin was formed in the manufacture of 2,4,5-T some time in 1966 or 1967. RSGCD45. But McRae also testified that he was not sure of that date, that he could not recall when he learned this information, and that the information about dioxin could have been provided to him as late as the release of the Bionetics report in 1969. McRae, A6324-6325,6327-A6329. More importantly, McRae confirmed that PSAC did not consider this to be an issue of consequence to the

President until it formed a committee in 1969. McRae, A6327-A6329.

Finally, Manufacturers ignore the one person who would best know what PSAC actually considered. Spurgeon Keeny, PSAC's technical assistant from 1958-1969, did all of the preparation work for PSAC meetings. Keeny, A6262,A6263,A6264-A6265. Keeny had no recollection of any PSAC discussions regarding the presence of dioxin in herbicides or the toxicity of the herbicides. Keeny, A6263;A6266-A6268.

c. United States Public Health Service ("USPHS")

Manufacturers also attempt to attribute the knowledge of the USPHS to those involved in the selection, evaluation or procurement of herbicides. RSGCD30-33,121. However, the USPHS was as far removed from these decision-makers as any governmental entity could be. It was located in Cincinnati, Ohio during the 1950's and 1960's, Key, A6270-A6271, and was not a part of the U.S. military services. Key, A6273.

There is no evidence that any USPHS personnel had any part in the decision to use Agent Orange or even that they provided information to anyone involved in that decision. Dr. Stokinger, whom the defendants point to as knowledgeable about the toxicity of 2,4,5-T, never even knew about the military's meeting at Edgewood in 1963 and had no recollection of ever discussing dioxin, chloracne, 2,4,5-T or even the health situation at Diamond Shamrock's Newark plant with any government personnel outside

his own Occupational Health division. Stokinger, A6425,A6419,A6424; Birmingham, A5956.

Dr. Birmingham, cited by Manufacturers at RSGCD31, never discussed any of his knowledge with responsible people at the DOD. Birmingham, A5953. Dr. Key, referenced by Manufacturers at RSGCD31, also never communicated his knowledge about phenoxy herbicides to anyone in the herbicide chain-of-command, including, Dr. Minarik. Key, A6276-A6277. Nor did Dr. Birmingham or Key have any reason to do so, as neither knew that herbicides were being used in Vietnam until after the war ended. Birmingham, A5950,A5951,A5955; Key, A6275-A6277.

Defendants try to impute USPHS knowledge to the military, because Birmingham and Key gave general dermatology lectures to the Army Environmental Hygiene Agency. RSGCD32. Manufacturers ignore testimony by three medical officers who worked at that agency and do not recall any mention about dioxin or even these lectures. Gastineau, A6145-A6149; Avellino, A5923-A5925; Duguid, A6098-A6099.

Lastly, Manufacturers try to impute all the knowledge acquired by USPHS to Edgewood scientists merely because USPHS maintained a liaison office there. RSGCD32. Boris Osheroff, the USPHS liaison to the Army Chemical Corp., who, if anyone, would have been the conduit for transmitting any USPHS data on dioxin to the

Army Chemical Corp. testified that he knew nothing about dioxin and chloracne until 1970-71. Osheroff, A6365, A6365-1-A6365-2. Even when Osheroff actually met with Dr. McNamara, he could not recall them ever discussing any specific compound such as dioxin or even 2,4,5-T. Osheroff, A6366-1-A6366-2.

d. Alleged Involvement by Military Not under the Edgewood Umbrella

Manufacturers also try to impute knowledge of dioxin in 2,4,5-T to the actual decision-makers by citing to any knowledge gained by any other part of the military, no matter how far removed they were from the actual selection, procurement, and inspection process. RSGCD51-52. None of these individuals had the knowledge the Manufacturers attribute to them, nor did they communicate what knowledge they did have to those responsible for the selection, specification, or procurement of the Manufacturers' 2,4,5-T products.

For instance, Manufacturers attempt to impute the knowledge of Dr. Walter Melvin to officers responsible for herbicides simply because he worked for the Air Force's Environmental Health Laboratory which was part of the Air Force Logistics Command, because this was "the same Air Force Command that was responsible for the inventory management of herbicides including Agent Orange." RSGCD51. Manufacturers omit a critical fact: the Air Force Logistics Command was an

enormous agency which employed over 120,000 people. A7956-A7958. Shead, A8163. Deep within the Command, Dr. Melvin had ten people working under him at the Environmental Health Laboratories. Melvin, A6330-1-A6330-2. While Melvin was doing his work on the effects of herbicides on aquatic life, *he did not even know that the Air Force was using herbicides in Southeast Asia* and he “had no personal involvement with” Agent Orange. Melvin, A6335-1. Melvin himself did not look at its potential toxicity to humans, Melvin, A6331-1 to A6331-2, and never even communicated any of the information he did find on 2,4,5-T to his immediate superior, Louis Arnoldi. Arnoldi, in fact, testified he never heard of the word “dioxin.” Arnoldi, A7954-7955.

Manufacturers also refer to requests by the Navy’s Bureau of Medicine and Surgery and the Office of the Army Surgeon General to the National Academy of Sciences (“NAS”) for information about three chemicals, including 2,4,5-T. RSGCD52. What is not said is that the NAS had to, in turn, request the information from Dow. *See* Letter from Ralph Wands of NAS to Dow, dated 7/11/66. A6873. Rowe of Dow then responded to Wands of the NAS by letter dated 7/21/66, A6874-A6875, and Wands passed the information in Rowe’s response back to the Army. 8/31/66 letter from Wands to the Surgeon General, A6870-A6872. That letter stated in part that “the Dow Chemical Company . . . has kindly supplied several reprints

dealing with their toxicity.” Remarkably, even though the NAS deferred to the superior knowledge of Dow, Dow continued to hide almost everything it knew about dioxin, not mentioning it at all in their response. A6874-A6875.

e. The Weldon Springs Project and T-S-R

The Weldon Springs project was intended to revamp an abandoned manufacturing facility at Weldon Springs, Missouri so that the government could produce its own Agent Orange. The government began the project in December 1966, Eckhaus, A6123-A6124, and terminated it on January 31, 1969. A5389.

Edgewood provided engineering support for the construction and operation of the facility. Because the Government knew nothing about the manufacture of herbicides, it contracted the operation out to Thompson Sterns Rogers (“T-S-R”), a joint venture of Thompson Chemical Company and Sterns Rogers. Jefferies, A6251-2; Stone, A8169. Thompson Chemical Company itself was located in St. Louis, not far from the prospective plant. Sterns Rogers was an engineering consulting firm located in Denver, Colorado, near the Rocky Mountain Arsenal, one of the facilities falling under Edgewood’s umbrella. The government relied on T-S-R to provide the process and the know-how in enabling it to manufacture Agent Orange. Eckhaus, A6110. T-S-R had complete control over the herbicide manufacturing process to be used at the Weldon Springs plant, requiring no authorization from anyone at

Edgewood. Ringenburg, A8138.

Among the many different groups at Edgewood, this project was assigned to the Weapons Development Engineering Laboratory (WDEL). Merl Ringenberg of Edgewood was “the commodity manager” for the project with Andrew Anderson his deputy. Eckhaus, A6108. Sigmund Eckhaus, an engineer at WDEL assigned the people to assist T-S-R, including Gerety, Gervasoni, Cox, Bushey, Jefferies, McMasters and Smith. Eckhaus, A6109-1-A6109-2,A6122-1; Jefferies, A6253-1,A6253-2. Almost all of them were stationed near T-S-R in Denver or Weldon Springs in Missouri. Eckhaus, A6113-1,A6113-2; Jefferies, A6253-3.⁹

Manufacturers argue that “[t]he Edgewood Arsenal chemical officers responsible for the Weldon Spring plant understood that dioxin could be expected to be present in varying amounts at every point in the process”. RSGCD60-61. This statement is misleading in several respects and false in others. First, at the time Edgewood was assigned responsibility for the Weldon Springs project, it was no longer involved in procuring herbicides from the Manufacturers or creating specifications for those contracts. That mission had, in 1964, been assigned to the Air Force under Vandeventer. Stone, A8170-A8171; A5384. Nor were any of these

⁹ Manufacturers attempt to obscure this fact, RSGCD61n.18, by saying they worked at “Edgewood,” but both Rocky Mountain Arsenal in Denver and Weldon Springs in Missouri were part of Edgewood.

individuals “closely linked in a mutual venture to assess the toxicity of Agent Orange,” as even Manufacturers acknowledge is required to satisfy the third prong of *Boyle*. RSGCD133. None of them had any responsibility for toxicity, nor did their superiors nor even their departments. Furthermore, it defeats the whole purpose of the warning requirement to allow Manufacturers to evade responsibility because of knowledge acquired by these individuals for a wholly different purpose, RSGCD96-97, and from a different source, when they were never involved with purchasing herbicides from Manufacturers.

In any case, it was not before the end of 1967 that three members of Eckhaus’ team, Cox, Jefferies, and Bushey, received information about the formation of dioxin from their sub-contractors, John Burton and T-S-R. It is documents generated by T-S-R and Burton, not the government, that Manufacturers quote heavily. RSGCD59-60. None of this reached any of the officers charged with overseeing the Weldon Spring Project. Eckhaus did not hear about even the existence of dioxin, much less its potential toxicity, until the latter part of 1968. Eckhaus, A6118-A6119. Eckhaus’ superiors, Ringenberg and his top deputy Anderson, never knew anything of industrial accidents nor did they hear of dioxin until after the entire Weldon Spring project was cancelled. Ringenberg, A8139, A8140; Anderson A7953, A5918. Even at the top of the project’s chain of command, Generals Hebbeler and Stanwix-Hay

were both unaware that dioxin was a contaminant of 2,4,5-T until 1969. Hebbeler, A6170, A6176; Stanwix-Hay, A6414-A6415-1. Col. Kratz, the contracting officer for the Weldon Spring project knew nothing about dioxin or chloracne until 1971. Kratz, A8062.

This lack of general knowledge extended to the remainder of the WDEL team. John Gerety testified that he knew nothing about dioxin or industrial health problems with 2,4,5-T until after he left his job at Edgewood. Gerety, A6151-A6157. Similarly, Gervasoni couldn't say when he first heard of dioxin. Gervasoni, A6159-A6160.

Although Manufacturers argue information about dioxin was contained in a February 20, 1968, memorandum by Jefferies that was "circulated" to "Edgewood Arsenal Staff at WSCP (*Weldon Springs Chemical Plant*)," RSGCD58 (emphasis added), they fail to mention that only *four* Edgewood staff people received the memo and none of them were based in Maryland. Jefferies, A6253-3; Gervasoni, A6160-1 to A6160-3.

Manufacturers cite to the "Weldon Springs Safety Manual" in claiming that the government knew that, even with temperatures controlled, dioxin would be created as a byproduct contaminating the product the government was purchasing. RSGCD92. The manual, however, is dated June 1969, over a year after the last Agent

Orange contract was entered into and months after the Weldon Spring Project itself was terminated. Moreover, the manual is not consistent with Jefferies' 1968 letter. That states only that no dioxin would be formed when the process temperature is 160°C, the same as Manufacturers were told ten years before by Boehringer. More importantly, Manufacturers fail to present any evidence that anyone in the government who was actually responsible for selecting, specifying, monitoring or even inspecting their herbicides saw any of the Weldon Spring documents they refer to.

Finally, it is clear that Cox, Bushey, and Jefferies knew far less than any of the Manufacturers. For instance, Cox, Manufacturers' single most knowledgeable government witness in this entire case, RSGCD57-58, testified: 1) the word dioxin was never mentioned when he visited Monsanto's plant in Nitro; 2) he never knew about health problems at Diamond, Dow or Hooker; 3) he never knew that dioxin could carry through to the end product, and certainly did not know that defendants routinely measured it in their final product; 4) he had no idea that dioxin could cause liver problems; and 5) he didn't even know that the chemical companies could test for dioxin in all their final product. Cox, A6028-A6031, A6038-A6050.

And contrary to Manufacturers' suggestion that the government lacked concern over dioxin's toxicity, RSGCD23, the Weldon Spring experience does demonstrate

that once government personnel were aware that dioxin was a contaminant of 2,4,5-T, they would do everything they possibly could do to eliminate it, regardless of the cost. A5011-5015. The government's explicit preference was to put safety ahead of costs and mass production. There is no evidence that the government knew or even believed that the Manufacturers would do otherwise.

VII. DIOXIN WAS PRODUCED AS A RESULT OF DEFECTIVE MANUFACTURING PROCESSES WHICH WERE EXCLUSIVELY CONTROLLED BY DEFENDANTS; NO ONE INVOLVED IN THE SELECTION, PROCUREMENT OR INSPECTION OF 2,4,5-T KNEW THAT DIOXIN WAS CREATED AS PART OF THAT PROCESS

It is uncontested that the government neither specified nor approved any manufacturing process Defendants used to create 2,4,5-T. RSGCD8. In fact, these processes were proprietary to defendants. (William McCarville, Monsanto's Director of Product Sales: "... there was a general policy that we didn't discuss our production processes with anybody outside Monsanto for any product." A8073-A8074) Yet, it was Manufacturers' use of processes employing excessive temperatures which resulted in high levels of toxic contamination. Affidavits of Dr. Harry Ensley, A3241-A3242 and A3953-3966. Manufacturers, employing *post hoc ergo propter hoc* logic, argue that if the government knew about the existence of dioxin or if it approved the design of an end product, then as a matter of law the government

approved of the defendants' manufacturing process. *Isaacson* at 438. Yet, even on this skewed factual presentation, it is unreasonable to infer that mere approval of an end product also means approval of the specific process chosen to make it.

More importantly, Manufacturers present absolutely no evidence that if they had changed their manufacturing processes to produce a safer product, they would not have been able to conform to government specifications. *Boyle* at 509-511. This they must do, otherwise, a contractor will have no incentive to make the product safer even when the government specifications would allow it. The rule Manufacturers argue for would essentially allow a contractor to walk away from state law liability even in the absence of any countervailing federal interest. Such a ruling would have the federal government pre-empt the field whenever a government contract is involved, which is precisely the result the *Boyle* court sought to avoid.

Certainly, *Boyle* was not designed to encourage manufacturers to make government ordered products *less* safe than their civilian counterparts. Yet that is exactly what Manufacturers did in this case. It was not until 1969, after Agent Orange orders ceased, that Monsanto adjusted their formulae to reduce the presence of dioxin in their product. As Monsanto itself states, "In January, 1969, the Federal government terminated its contract with Monsanto for 2,4,5-T and plant emphasis was again placed on quality." A5600-1 (emphasis supplied). Dioxin levels were

then totally reduced to "0.8-3 ppm, as compared to 3-20ppm in 1968." A5602.

Nor do the Manufacturers cite any case where summary judgment was granted because approval of an end-product validated a manufacturing defect. Instead, Manufacturers rely heavily on two cases, each of which involved pieces of unique military equipment tested and designed solely for government use: the F-16 all electric fighter aircraft in *Harduvel v. General Dynamics*, 878 F.2d 1311 (11th Cir. 1989) and the night vision goggles in *Zinck v. ITT Corporation*, 690 F.Supp.1331 (S.D.NY 1988). RSGCD89-90n.27, RSGCD98. In both cases, the products in question disintegrated in a plane crash and could not be examined to determine the precise flaw which caused their malfunction. The *Zinck* court granted summary judgment because the goggles were inspected, found to meet government specifications, and plaintiffs could produce no evidence of a manufacturing defect. *Zinck* at 1337. Similarly, in *Harduvel*, the absence of evidence of the specific flaw effectively turned plaintiffs' attempt to show a defect into a design case, not a manufacturing case. *Harduvel* at 1318-1319. Clearly, in each of these cases, Plaintiffs could not muster the proof necessary to make a facial claim of a true manufacturing defect.

Here, not only do Plaintiffs claim a manufacturing defect; they are supported in that claim by the affidavits of Dr. Harry Ensley. A3241-A3242;A3953-3966. Dr.

Ensley stated that by using high reaction temperatures to speed up production, Manufacturers caused large amounts of dioxin to form in their products. AI47.

Manufacturers claim that a product which conforms to specifications, no matter how imprecise, *per se* cannot have a manufacturing defect. This defies common sense. As noted, 2,4,5-T could have contained up to 20,000 ppm of dioxin—a lethal dose—and still theoretically complied with specifications. In *Bailey v. McDonnell Douglas Corporation*, 989 F.2d 794 (1993), the 5th Circuit repudiated *Harduvel*, stating that (as with the dioxin created by the Manufacturers in this case):

“[I]t is possible to have an allegedly defective feature about which the government specifications are silent. For example, if the government specifications regarding the bellows canisters did not specify the type or quality of metal to be used, a metallurgic defect in the cannister would not be inconsistent with a finding that the cannister conformed to specifications.”

Id.

Mitchell v. Lone Star Ammunition, 913 F.2d 242 (5th Cir. 1990) also criticized *Harduvel*'s discussion of the manufacturing defect issue:

“[Harduvel's] reasoning that manufacturing defects consist only of aberrational defects is unfortunate. One can certainly conceive of situations in which a manufacturer's shoddy workmanship – neither approved nor authorized by the Government” – [like the excessively high temperatures the Manufacturers used to make Agent Orange] – “produces a defect that occurs throughout an entire line of products...In such situations, no federal interest would support the extension of the government contractor defense. In this Court's opinion, the relevant inquiry is the degree of manufacturer's responsibility for the defect in question.”

Id. at 248, n.10¹⁰

Lastly, Manufacturers mention but nowhere cite any documents or testimony that anyone involved in the government’s selection, specification, procurement, or inspection process knew how “dioxin” was produced during the manufacturing process but “failed to specify another production process.” *Isaacson* at 442; RSGCD8,96-97 (though without any citation). Certainly, Manufacturers never volunteered this information to the government. When Colonel Shade, the DOD’s herbicide manager, was asked: “What, if any, discussions did you have with respect to the actual manufacturing process?” he responded: “I do not recall of any.” Shade, A8207-1.

Nor did the government even monitor Manufacturers’ production processes. AB43-47. When Eugene Bak, a superintendent at the Diamond Newark plant from 1966 to 1969, was asked about visits from the government related to Diamond’s

¹⁰Manufacturers’ citation to *Wilson v. Boeing*, RSGCD100-101, is misleading. *Wilson* is a pre-*Boyle* case which only looked to whether specifications were established and not to whether the specifications were “reasonably precise.” Meanwhile, in both *Maguire v. Hughes Aircraft*, 725 F. Supp. 821 (D.N.J. 1989) and *Stout v. Borg-Warner*, 933 F. 2d. 331 (2d Cir. 2001), RSGCD101, the defense was only sustained because “the military made a decision after an extensive design process” to produce a product with a design later claimed to be defective, *Maguire* at 824; *Stout, supra.* at 336. In this case, by contrast, plaintiffs claim is that the Manufacturers’ production processes, and not the design, was defective.

production processes, he replied: “I do not recall meeting or discussing anything like that with these people.” Bak, A7961-A7962

VIII. THE GOVERNMENT CONTRACTOR DEFENSE MAY NOT BE USED WHEN THE MANUFACTURERS SELL THE GOVERNMENT A PRODUCT WITH THE EXACT SAME DEFECT AS IT SELLS COMMERCIALY

Manufacturers offer a number of policy arguments to support their claims to summary judgment but ignore the fact that they were selling to the military the same products containing the same defect – dioxin contamination – that they sold domestically. AB11-22, AS16-19. *Boyle* expressly states that the government contractor defense cannot be invoked if the government orders off-the-shelf products, such as “stock helicopters that happen to be equipped with escape hatches opening outward”. *Boyle* at 509. AS11. The Supreme Court stated that the defense would not apply even if it was obvious to the government that with the escape hatch opening outward, there was an “inherent defect” that in the event the helicopter submerged, it would be impossible to escape. The Court held that with a stock item, such as Manufacturers’ 2,4,5-T, it is the contractor, not the government, that exercised the discretion which created the defect.

There can be no real dispute that the government was purchasing stock items from Manufacturers. The official Air Force history of Operation Ranch Hand says:

None of the herbicides used in Southeast Asia were of a new or experimental nature. They had all been used for several years in commercial agriculture, both in the United States and in other countries. . . [I]n 1961, the year before the Ranch Hand program began, about 40 million acres, plus hundreds of thousands miles of roadside, railroads, and utilities rights of way were treated with phenoxy herbicides in the United States. Of this total, more than ten million acres, an area about one-fourth the size of South Vietnam, received aerial spray applications. The herbicides used in Southeast Asia were familiar agriculture chemicals, and aerial spraying of them was common. Buckingham, A7986.

These stock herbicides differed greatly from the custom military product which the government contractor defense contemplates. AB15-19. As Albert Hayward, a Director of the Defense of Departmental Research and Engineering testified, Hayward, A8023-A8024:

(I)n the defoliation program we were using materials or testing materials that had been developed by the various chemical companies and relying to some extent upon the experience and knowledge of the various commercial producers and users. It's very hard to find much commercial background in producing 155 millimeter shells or anything of the sort.

Gen. Maxwell Taylor, Chairman of the Joint Chiefs of Staff and Ambassador to South Vietnam, agreed: "It had been decided to use a commercial herbicide made in the United States." Taylor, A8185-A8186. Indeed, government personnel who were involved in approving the use of the herbicides uniformly stated that the government was buying commercial products. AB16-19; Olenchuk, A6363.

Nor do Manufacturers deny that the same 2,4,5-T, contaminated with the same

dioxin that was sold in Agents Pink, Purple, Green and Orange, was widely sold commercially for many years. RSGCD11; Charles Zorsch, Monsanto's manager of herbicide sales, A8193-A8194. Dow and Monsanto personnel admitted that even the butyl esters of 2,4,5-T were, contrary to Manufacturers' claim at RSGCD13, sold commercially before the Vietnam War. Monsanto's Luecke, A8071; Dow's Holdeman, A6196-1-A6198,A6201-1. Indeed, the Manufacturers had almost two decades of experience with lawsuits over these herbicides, many of which related to testing and aerial spraying. AB14-15. *See, e.g. Agricultural Chemical Co. v. Dow Chemical Co.*, 274 F.2d 411 (1960) over Dow's testing of 2,4,5-T going back to 1948.

Manufacturers attempt to distract the court from these facts by arguing that the government also tested herbicides for use throughout the 1940's and 1950's. RIR4-8; RSGCD13-15,16-20. However, that the government wanted to use the best material for the job does not alter the fact that in the end the material selected was chosen in very large part due to availability, because it was a widely sold commercial product. AB11-19. Manufacturers even admit this. (RSGCD117: "the government began its design process by working from chemicals that it already knew to be effective herbicides, rather than by inventing new ones"). Furthermore, Manufacturers ignore the fact that all the testing conducted in the 1940's and 1950's, RSGCD13-15, did not

matter because at the time the government needed to select herbicides which would work in Vietnam, the government's own herbicide program had been shut down for more than three years. AB16.

That these were stock items is further buttressed by the fact that Manufacturers often held patents on them, going back to 1944 for 2,4,5-T in the case of Dow. AB13. Accordingly, Manufacturers vainly attempt to recast Dow's patent infringement claim against the U.S. government for its use of Agent Purple, which was the original formulation of choice. RSGCD24; RSGCD116-117; AB13,19-21. Dow argues that this patent did not make Agent Purple an off-the-shelf product, but its own employee, Kenneth Hanson, told the Government that it should pay the infringement claim because "these agents had long been patented, were standard commercial items when sold under a Dow trade name and had patents on their containers". A3850. Indeed, Dow argued not only that the Government should have known that this process was patented, but also that Diamond and Monsanto should have known it as well because of a commercial dispute concerning the same patent which occurred in 1956. A3850. Furthermore, Manufacturers do not dispute that Dow suggested the specification that resulted in the infringing composition of Agent Purple, nor that the Government accepted this specification while relying on Dow's expertise without conducting its own investigation. AB20. And, contrary to

Defendants' claim, RSGCD116, the letter from the Government's patent lawyer, A3858, stated that *three* contracts with Monsanto contained the specifications which were so vague that they could be interpreted as covering the infringing composition Purple as well as the non-infringing composition Orange: "Butyl esters of 2,4-D and 2,4,5-T product shall consist of a mixture 50% 2,4-D and 2,4,5-T butyl esters."

After initiating its claim, Dow told the government it would withdraw the claim "if the government does not buy any more Purple from anyone but Dow." A8206. By that time, the price for Agent Purple increased by about 20%. A8211-A8212. Dow also claimed that 2,4,5-T containing Agent Pink infringed on their patent, resulting in royalties being paid on that as well. *Id.* Ultimately, the government had to enter into a 1964 license agreement with Dow in which it paid Dow over \$30,000 in royalties for both Purple and Pink. A8214-A8225. These facts raise another material issue of fact: whether the government imposed specifications on Dow or Dow imposed them on the government.

Manufacturers made two separate stock items, 2-4-D and 2,4,5-T, that could be sold alone or mixed together in varying percentages. AB13-16. It was very common to mix them, because each of them was effective on a different type of foliage. AB13-16. In attempting to distinguish these from stock off-the-shelf products, Manufacturers raise four arguments: 1) that the 50/50 mixture, as against

some other mixture, somehow made it unique; 2) that 2,4,5-T in Agent Orange was more concentrated, given that it was not as diluted with “inert” ingredients; 3) that the 2,4,5-T sprayed in Vietnam was somehow more potent; and 4) that the 2,4,5-T was sprayed in a more concentrated fashion in Vietnam than domestically. RIR8; RSGCD2-3,11,22,27,113. None of these hold up to scrutiny.

While Manufacturers argue that Agent Orange was a unique 50/50 mix of the n-butyl esters of 2,4-D and 2,4,5-T, this ignores the fact that Agent Purple was a patented stock item that also constituted a 50/50 mixture, albeit that the Agent Purple mixture was of 30% n-butyl with 20% iso-butyl to help stop crystallization. RSGCD110n.31,RSGCD116. Commercially there were endless ranges of mixtures, just as with paints of different colors, but the bottom line is that the 2,4,5-T and 2,4-D in each such mixture were the end products of Manufacturers’ production process. It made no difference whether the Manufacturer or the end user put the two chemicals together; Manufacturers never allege that it was the combination that somehow increased toxicity.

Secondly, Manufacturers readily admit that 2,4,5-T sold commercially was not sold in concentrations less than 55% 2,4,5-T. RSGCD29. Yet, the 2,4,5-T component of Agent Orange and Agent Purple constituted no more than 50% of the delivered product and, as a result, were always actually in these Agents at a

concentration lower than Manufacturers' domestic product. That it was "diluted" by 2,4-D rather than an "inert" ingredient is irrelevant, since Manufacturers make no claim that adding 2,4-D instead of an inert ingredient somehow made it more toxic to humans.

Third, Manufacturers contend that there was some unspecified difference in potency between the stock herbicides used in Vietnam and the ones used commercially, RSGCD19-20, but they never explain any basis for this assertion. Instead, they refer to general statements from documents which often discussed all herbicides as a group, as if the document were referencing 2,4,5-T in particular. RSGCD20. This "potency" claim is never accompanied by testimony from their own personnel nor from anyone who actually investigated 2,4,5-T.

Throughout all of this, Manufacturers take select quotes out of context, RSGCD19,30. For instance, manufacturers claim that an IDA document suggests non-conformance with "the high safety standards required by the [FDA] for commercial agriculture" and this was needed because of "exigent circumstances" in Vietnam RSGCD19,95. No document mentions "exigent circumstances"; instead, IDA endorsed the herbicides precisely because they would prove less toxic in Vietnam for the reason that "any agent will, in most areas, be used once, or at most a few times" RA43, Manufacturers then claim that the appendix to that document

anticipated “Toxicological Considerations” and “consequences” from using 2,4,5-T. Manufacturers quote fails to include the words preceding their excerpt; “almost all commercially available phytoactive chemicals have moderate or low toxicities for humans and domestic animals.” RA401-403. This fact was the prime consideration since these agents, which in this document included *all* potential herbicides, were “applied by or came in contact with farmers and farmhands who generally had little or no awareness of the toxicity hazards.” RA401.

Finally, Manufacturers state that “an Army report emphasized the hazards this specification implied and warned that Agent Orange ...should not be used in civilian environments” RSGCD22, but the report, dated November 27, 1968, simply discussed the bureaucratic snafus that occurred because of multiple specifications and purchase descriptions for the same herbicides. It cautioned against further confusing the military with the civilian specifications, but it never discussed any “hazards” or toxicity whatsoever. RA404-405 (discussing the fact that the Army and the Air Force had different nomenclature - “defoliant” versus “herbicide” - and different procurement practices - “military specifications” versus “purchase description” - for the same herbicides). This “potency” claim is never supported by testimony from their own personnel nor from anyone who actually investigated 2,4,5-T.

Significantly, Manufacturers never cite to the person who would best know

whether the 2,4,5-T used in Vietnam was more potent than that used commercially.

Dr. Minarik, who selected 2,4,5-T, unequivocally testified that there was no difference in the potency between the commercial product and the product the government was purchasing:

Q: Was an additional purpose of the diluent to make the product less potent?

A: They can't make it less potent. All it means is you have got fewer grams or pounds of the active material per gallon. The potency is the same. In other words, a pound of 2,4-D, whether it's diluted or undiluted is going to kill the same number of trees and so on.

Minarik, A6143-2.

Manufacturers' final argument is that the product they sold was used in Vietnam at a higher concentration than it was used commercially. First, even if true, this argument confuses the "learned intermediary defense" with the "government contractor defense." A predicate for the government contractor defense is that the product manufactured and sold was designed in a way that would conflict with the enforcement of a state law duty. To the extent that the government might have used a commercial product inappropriately, it may raise a defense based upon that inappropriate use, such as a V.A. physician using a pharmaceutical drug off-label, but it does not transform the underlying commercial product into a government specified product any more than the physician's off-label use would. Moreover, the facts are

that the 2,4,5-T sprayed in Vietnam was not sprayed in a concentration unheard of domestically. The record is clear that Agent Orange was sprayed at 3 gallons or about 24 pounds per acre. RSGCD18. This was well within the range of civilian agricultural use:

Since 1947 more than three hundred million pounds have been produced and used to control vegetation on more than four-hundred million acres of land in the United States. Rates of application range from one-sixteenth to one-hundred-sixty pounds per acre. “Tentative Agenda for Meeting of the PSAC,” A4774 (emphasis added).

In other words, these herbicides were at times used in the United States itself at concentrations six times greater than used in Vietnam.

In conclusion, multiple witnesses with technical knowledge testified that the product specified by the military was not different from commercial 2,4,5-T. As has been demonstrated in detail, these not only include Eckhaus, Young, Minarik, and Professor Ensley, but also Dow’s Holdeman, Diamond’s King, and Monsanto’s Russell. See also RSGCD110n.31; AB19-20,40-43. At the very least, this creates a question of fact which defeats summary judgment.

IX. MANUFACTURERS KNEW FAR MORE THAN THE GOVERNMENT ABOUT THE DIOXIN WHICH CONTAMINATED THEIR PRODUCTS

Plaintiffs have presented overwhelming evidence that Manufacturers possessed extensive knowledge about dioxin in their 2,4,5-T, as well as its adverse

systemic, hepatotoxic and carcinogenic effects. AS28-45. This court must not only construe this evidence in favor of the plaintiffs; it must also note that, in response, no Manufacturer other than Dow has put forward a single document authored by one of its own employees. Nor have they put forward testimony from any of their employees' depositions demonstrating that they shared any information with anyone in the DOD about dioxin, the chloracne or hepatotoxicity discovered in exposed workers, or that it was a likely carcinogen. No Manufacturer has presented any evidence that it ever asked anyone in the DOD exactly what the government knew about dioxin in 2,4,5-T. Instead, the evidence is indisputable that they actively sought to hide their knowledge. Manufacturers do not contest that Dow: 1) had intimate knowledge of chloracne going back to the 1940s; 2) was well aware of the potential for 2,4,5-T and its contaminant dioxin to cause systemic injury, including liver damage; 3) had its own health department and toxicologist, Dr. Rowe, on staff; 4) conducted its own animal experiments on 2,4,5-T and dioxin; and 5) believed dioxin to be the most hazardous substance it had ever investigated. AS28-30. Manufacturers do not contest the fact that they had developed extensive knowledge of the possible health affects which dioxin could cause by gaining information from Boehringer in the 1950's. AS30. Nor do Manufacturers contest the fact that by 1961 they knew that the contaminant was toxic to the liver, lungs and nervous system.

AS36-39.

Notwithstanding this knowledge, Manufacturers attempt to excuse their lack of candor at the 1963 Edgewood meetings, RSGCD40n.11, but only by ignoring all of the above as well as the extensive information they received from Boehringer as to how to control the presence of the dioxin contaminant, AB47-56.

Despite having 30 years of experience with systemic injuries caused by dioxin contamination, when Dow's Lynn submitted to General Delmore what he called "the information available to us," A3396-A3397, *none* of that information was included. Wills, A6515-A6516 The 15 pages of information Dow did provide for the meeting disclosed nothing about dioxin being in 2,4,5-T nor did their nine cited references. Dow did *not* include the Kimmig and Schulz article, though Dow Research had long since copied it from the original German. A4662-A4666. Instead, Dow utterly misrepresented the facts, telling the government: "To the best of our knowledge none of the workmen in these factories has shown any ill effects as a result of working with these chemicals." *Id.* (emphasis added). Nor did they attempt to correct Dr. Minarik's misunderstanding, described by Manufacturers at RSGCD40. A4618.

One of the most knowledgeable people in the world on dioxin was Dr. Rowe, the chief toxicologist of Dow, who attended the Edgewood Task Force meeting. Wills recalled that most of the presentation on the properties of 2,4,5-T were made

by representatives of Dow. Wills, A6503-A6504. Yet, in making this presentation, Dow chose not to say anything about its own or Boehringer's experience with chloracne and other systemic illnesses. AS29-31. Instead, Rowe stated that there had been no serious illnesses among Dow's workers or other health problems caused by these chemicals. Silver, A6391; Wills A6515-A6516; Shaw, A6385-A6387. Then, four days after the meeting, Dow sent a letter to Dr. McNamara, dated April 30, 1963, further certifying the safety of the compound. A5846-60-A5846-61.

In the end, the Minutes of the Edgewood meeting, held on April 26, 1963, concluded that 2,4,5-T was not toxic because of the commercial record. Dr. Minarik, basing his decision on what the Manufacturers told him, commented that "in spite of long periods of exposures to these compounds, there were no effects noted in the workers." A4618. Dr. Shaw of the USDA stated in his presentation: "[T]he major manufacturers of the phenoxy herbicides have certified that none of the workmen in their factories have shown any ill-effect." "Minutes of a meeting to discuss and evaluate the Toxicity of 2,4-D and 2,4,5-T" A4615-4628. As such, there is no question that the widespread commercial use of these herbicides and Manufacturers' outrageous misrepresentations about the lack of health effects among their workers were major reasons 2,4,5-T was approved for use in Vietnam. AS42-44.

Even after Dow had a major epidemic of chloracne at its factory, there is no

evidence that Dow reported this fact to anyone working for any branch of the Department of Defense.¹¹ Rowe himself could not recall if he ever informed anyone in the Federal government of this epidemic at any time. Rowe, A6373. Indeed, Manufacturers do not dispute any of the following facts:

- (1) that subsequent to this major worker health disaster, Dow called a secret meeting in Midland of all major manufacturers to develop a strategy for dealing with the dioxin contamination of their herbicide production;
- (2) the Manufacturers recognized that the dioxin contamination would carry through to the final product and endanger the end users;
- (3) not a single government representative was invited to attend the meeting;
- (4) at the meeting the Manufacturers conspired to hide their testing methodologies and results from the Government. AS31-35;
- (5) a month later, Dow and Hercules discussed the fact that manufacturers were “marketing 2,4,5-T acid which contains alarming amounts of acnegen and if the government learns of this, the whole industry will suffer.” Note to Jacksonville Arsenal, A5681, A6923; and

¹¹Dow claims to have informed Jane Lewis about this epidemic sometime “between 1965 and 1968.” RSGCD122. But Lewis, a Commerce Dept employee, “knew very little about [chloracne].” Lewis, A10666-2. Of note is that Lewis, who was not in the DOD, had no responsibility for the selection of 2,4,5-T, no responsibility for writing specifications for it, no responsibility for evaluating the product submitted to the military, and “no responsibility in the health area.” *Id.*, A10666-6 Further, she testified that she relied on Dow’s statement that the problem was corrected and never had an understanding that dioxin could be in the final product. *Id.*, A10666-2, A10666-4-A10666-6.

- (6) Monsanto's Medical Director Kelley noted that the dioxin contaminant was conceivably "a potent carcinogen," something which also was never told to anyone in the government and is not even suggested in a single government generated document. A5678; AS33.

Indeed, while listing various studies performed by the government, RSGCD28-30, Manufacturers ignore the fact that only *they* did studies on dioxin as a contaminant of 2,4,5-T: "in order to measure the toxicity of the dioxin impurity, [The Dow Chemical Company] undertook a series of acute toxicity studies on small animals in 1967." A8229 These studies were not released to the government until 1970, even though they revealed troubling information that assumed even more importance when Dow saw the Bionetics study.

Manufacturers claim that they provided "extensive information" about worker health problems at their plants which fully alerted government personnel to the dangers of dioxin produced in the manufacturing process. RSGCD57. Yet, all of this, by their own representation, was in the form of just two letters, the first of which was not mailed until February 24, 1967, almost four years after the Edgewood Task Force meeting! The letters went to personnel exclusively involved with the Weldon Springs project, not the procurement of herbicides from the Manufacturers. Moreover, the three page letter to General Hebbeler that Manufacturers trumpet as "Dow's warnings about dioxin" does not even contain the word "dioxin." RSGCD 60-61,121; RA 87-89. In fact, the letter's entire reference to health questions states

only:

Because of certain production inefficiencies and because of certain health problems inherent in the present process which require extra cause for employee protection. Dow has plans underway to replace its present tetrachlorobenzene facility within one or two years. Dow letter of 2/24/67 to Hebbeler at RA89.

Dow then claims that its other health warning to the government came in an eight page April 26, 1967, letter to Fredericks in which Dow “discussed the chloracne hazard, methods to detect dioxin content, and a process that had been developed by C.H. Boehringer, a German chemical company to reduce dioxin levels”. RSGCD60; A2389-38-A2389-40. One is hard pressed, though, to find *any* of these topics discussed in the single reference to toxicity in that letter:

A serious potential health hazard to production workers is involved in the production of 2,4,5-T. Dow has informed other manufacturers of this danger and methods to detect it. We have not shared our knowhow regarding elimination of the hazard, but would be willing to consider conditions under which this knowhow could be made available. Some of this knowledge is covered by an agreement with a European corporation which presently limits our ability to transmit this information to others. A2389-31-A2389-33.

There is no evidence that Fredericks, the only addressee on the letter, interpreted it to mean that the toxic contaminant was “dioxin,” that it carried through to the final product, or that the “potential” health problem had actually resulted in any worker illnesses. While Dow was fully aware that dioxin was in the final product and measured every batch for the presence of dioxin, those who received this information

thought that the hazards reported were due solely to dangerous elements in the raw materials or intermediates being used to make the final product. Fredericks himself testified that he never heard of dioxin during his time at Edgewood, and, more importantly, did not pass the letter on to anyone else or ever discuss it with Dow. Fredericks, A8016,A8017,A8018. General Hebbeler testified that “[l]ots of times in the production of chemicals you run into intermediates that are problems”. Hebbeler, A6171. Nothing that Dow “brought out” to him struck him “as anything unusual.” *Id.* Nor did Dow transmit the contents of this letter to anyone involved in the selection, specification, or monitoring of the herbicides being used in Vietnam.

While Dow argues that these two letters constitute their exculpatory warning to the government, they run away from the testimony of their own employees, RSGCD122-123. Despite Dow’s claims to have informed the government, its employees uniformly denied that fact: J.K Leasure, Dow’s Research Group Leader for herbicide research, met with DOD personnel at Fort Detrick, Washington D.C. and Saigon, but never told them about Dow worker health problems, A8065,A8066,A8067,A8068; William Schambra, Dow’s R&D Contract Officer, met Minarik, Darrow and attended three conferences at Fort Detrick but never discussed toxicity or Dow worker health problems with anyone, A8157-A8160; Etcyl Blair, Dow’s Director of Health and Environmental Affairs does not know of anyone telling

Edgewood of health problems to workers, A7972-A7973; Donald McCollister, Dow's Manager of Registration had no knowledge of anyone telling DOD dioxin was a highly toxic contaminant, A8077; Winfield Sunderland, who worked in Dow's D.C. office on registrations, never transmitted information on toxicity of any chemical to any governmental agency, A8174-A8175; Dow's Rowe did not recall telling anyone in DOD about dioxin even though he believed "the 2,3,7,8 isomer was the most toxic that had been identified," but he felt "one should avoid regulation," A6371-1, A6373, A6375, despite the fact that Dow's Silverstein testified that Rowe was the designated contact with the government on dioxin, Silverstein, A8166.

As to other Manufacturers, despite regular dealings with members of the DOD, they were equally silent about their knowledge of both worker health problems and dioxin toxicity:¹² Elmer Wheeler, Monsanto's Industrial Hygienist knew dioxin was

¹² In this respect, Manufacturers treated the Government the same as their commercial customers, who also received no warnings whatsoever about dioxin. Diamond's King, A6279-1. Manufacturers assert that the government stated that they were limited to placing an Orange stripe on their products by the government. First, any such limitation was only written in contracts after substantial 2,4,5-T had been sold. More importantly, if Manufacturers had informed the government of the possible contamination of their product with dioxin, it is hard to assume that the government would not want to inform soldiers of its extreme potential toxicity. The government could not warn about what it did not know about. There is absolutely no evidence that Manufacturers ever informed the government about the dangers of the dioxin contaminant and the government then told them that it still did not want warnings. In this respect, this case is even stronger than *Grispo*, where the Government admittedly knew about the hazards of asbestos and didn't

“very toxic,” harmed the liver, and had been associated with loss of libido and impotency, but he never told anyone in the government, A10294-1,A10294-2,A10294-3,A10297-1,A10297-2; Charles Zorsch, Monsanto’s manager of herbicide sales felt no obligation to pass on product toxicity information to any customers, A8192; neither Jack Borrer, Diamond’s industrial hygienist, nor King ever told DOD about chloracne. Borrer, A7976,A7977; King, A6279-3.

As a result of this conspiracy of silence, when Ambassador Bunker ordered a full policy review of the herbicide program in 1968, the policy makers still had no idea about dioxin. The final report endorsing continuing the program, A8287-A8296, included an appendix on herbicide toxicity by two of the key Ft. Detrick scientists, Drs. Minarik and Darrow who were involved in the original selection decision in the early 1960's. A13036; A4399. Their report, entitled “Toxicity of Herbicides in Use in SVN” evidences that as late as April 3, 1968, government personnel intimately involved with Agent Orange were still unaware of the illnesses among production workers which Manufacturers insist everyone knew, RSGCD3, RSGCD25: “Personnel involved in manufacturing these herbicides have been singularly free from ill effects attributable to these herbicides even though they were exposed for long periods on a daily basis.” A8093.

require warnings.

Finally, Manufacturers claim that the study performed by the independent Bionetics research lab shows that the government knew of the toxicity of 2,4,5-T contaminated by dioxin and used in Vietnam. RSGCD46-49. However, this study was not released until 1969. Moreover, the purpose of the study had nothing to do with Vietnam, as it was actually initiated over concerns related to DDT. 2,4,5-T was included, among hundreds of other chemicals, only because of its widespread domestic use. Endicott Statement, A5111-A5113. Kenneth Endicott, Director of the NCI, who defendants say announced the study, RSGCD48n.15, knew nothing of the use of Agent Orange and never even heard of dioxin or chloracne. Endicott, A8009-A8012. Carl Baker, Manufacturers' source for all knowledge defendants attribute to the NCI, RSGCD48, did not learn 2,4,5-T was being used in Vietnam until 1975. Baker, A5927. The Bionetics researchers' obliviousness to the use of 2,4,5-T in Vietnam extended to Courtney and Fishbein, Courtney, A6022-A6023; Fishbein, A6130-A6131, though Manufactures ignore this in their discussion at RSGCD48-50.

Manufacturers attempt to link the Bionetics Laboratory report with PSAC, but this is as unavailing as it is irrelevant. Longtime PSAC Chairman Hornig did not review any report issued by the Bionetics Laboratory with respect to its analysis of 2,4,5-T before he left Washington in 1969. Hornig, A6221. To the best of Hornig's knowledge, copies of the Bionetics report were never distributed to members of the

PSAC before some time in 1969. Hornig, A6221. Neither Wiesner nor Hornig ever saw the Bionetics report until they reviewed documents provided to them for their depositions in MDL381! Weisner, A6476; Hornig, A6222. No one at PSAC was aware of the progress or conclusions of the Bionetics report during the entire course of the Bionetics Laboratory research until it was near finalization in mid-1969. Baldeschwieler, A5931-A5933, A5934-A5935, A5937-A5939.

It was Lee DuBridge, Hornig's successor who was appointed by President Nixon, DuBridge, A6226-A6227, who first obtained a copy of the Bionetics report and discussed it with members of PSAC for the first time in mid-1969. Baldeschwieler, A5929-5931. DuBridge was taken by surprise by the existence of the report. Baldeschwieler, A5938-A5939.

Contrary to the Manufacturers' claim, the Bionetics results were made available to them well before their release to the public. In February 1969, when the Bionetics results were made known to "Dr. Minarik and others at Fort Detrick," RSGCD50, the information was also distributed to the Manufacturers. Letter from Bionetics to Hercules, Feb. 4, 1969. A3743. Indeed Minarik called Dow to discuss it with them, and Dow led him to believe the results were not serious. Minarik, A6347-A6348. A jury could infer that Minarik's reaction would have been different had he been aware of the dioxin contaminant in 2,4,5-T, but he did not learn about

that until 1970. Minarik, A6347-A6348. Indeed, given Dr. Minarik's concern about the toxicity of the herbicide he selected and the fact that Dow's report on the heels of the Bionetics study ended the government's use of 2,4,5-T, it is at least a question of fact whether the Government would have selected 2,4,5-T at all if the manufacturers told them about the contamination.

In any case, it was only *after* receiving the Bionetics report in 1969 that PSAC was first asked to investigate 2,4,5-T. As soon as it began its investigation, however, it was confronted with the fact that the government's information "is highly fragmented and often separated from the people making decisions" – especially in the case of the use of 2,4,5-T. Baldeschwieler, A7968-A7969. It further discovered that before Dubridge initiated the presentation of the Bionetics report to PSAC in late 1969, no one in the government had even made an effort "to pull together all these fragmented pieces of information . . . and put it on the desk of the Secretary of Defense at any time when he was making the decision to use or to continue to use the defoliant in VietNam." Baldeschwieler, A7970.

It was on the basis of receiving this information and Dow's admissions in March 1970 that the government finally ended the use of Agent Orange. Manufacturers attempt to indicate that the toxicity of dioxin was not implicated in the decision to use or cease using Agent Orange, quoting John Foster, former Under

Secretary of Defense, RSGCD94-95. However, Foster's statement that the government "was doing the right thing to save lives" was made before he and others learned Agent Orange was contaminated with one of the most toxic byproducts known to man. Once he learned that, Foster's position changed radically. Immediately upon receiving the Bionetics' report, the Defense Department restricted the use of Agent Orange herbicides to areas remote from the population. Buckingham, A8310. And after Dow revealed for the first time in March 1970 what it knew about "dioxin" in a meeting with DOD, it was announced that the use of Agent Orange would be suspended completely in April 1970. Buckingham, A8311. Indeed, this fact is confirmed by Dr. McNamara's letter of March 11, 1970, which describes the meeting in which Dow finally revealed the dioxin data to the military. A5732. In this letter, McNamara portrays all of the information about the existence of dioxin as an impurity that was associated with the manufacture of TCP as coming from Dow.

However, Manufacturers had this and more information throughout the time they were selling 2,4,5-T to the government at great profit. But instead of warning the government, they hid the dangers they knew about their profitable herbicides. Manufacturers cannot fulfill their burden of proof on the third prong of Boyle.

X. CONCLUSION

The Judgment of the lower court should be reversed.

Respectfully submitted,

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VIII. CERTIFICATE OF COMPLIANCE

This brief complies with the type-volume limitation of Fed. R. App. P. 32(a)(7)(B) because: this brief contains 19,358 words, excluding the parts of the brief exempted by Fed. R. App. P. 32(a)(7)(B)(iii)

This brief complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and the type style requirements of Fed. R. App. P. 32(a)(6) because: this brief has been prepared in a proportionally spaced typeface using Wordperfect in 14-point Times New Roman.

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CERTIFICATIONS PURSUANT TO LOCAL RULE 32(a)(1)

I, Stephen Peabody, hereby certify that: a converted PDF version of the foregoing brief was created and compared to the paper original and found to be a true and complete copy thereof. Said PDF version of the foregoing brief was also scanned for viruses using Symantec AntiVirus Full Version 10.0.0.359. No viruses were detected. Said PDF version was also submitted to the Court and opposing counsel via e-mail attachment.

Stephen Peabody