

US EPA ARCHIVE DOCUMENT

**The CK Witco & Elf Atochem  
Clean Air & Nonbiocidal Antifoulant  
Coating Project**

**A Proposal to the US EPA Office of  
Reinvention**

January 14, 2000



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## 1.0 Introduction

CK Witco,<sup>1</sup> based in Greenwich, Connecticut and Elf Atochem, based in Philadelphia, Pennsylvania (the “Companies”) are producers of tributyltin compounds (“TBT”),<sup>2</sup> used in antifouling marine paints. TBT based paints, first used in the 1970’s, assist in keeping ship hulls free of marine organisms by acting as both a biocide and as an agent that imparts a “self-polishing” quality to marine paints. For ocean going vessels, TBT self-polishing copolymer paints are currently the most effective means of preventing ship hull fouling by marine organisms.<sup>3</sup> Their use by the shipping industry results in substantial savings in fuel and maintenance costs that would otherwise be incurred in the absence of such an antifouling coating.<sup>4</sup> The superior performance of TBT based paints ultimately resulted in their wide spread use on pleasure craft as well as large ocean going vessels for which such paints were originally designed.

In the 1980’s, regulatory organizations in the United States and around the world became concerned about levels of TBT being found in the marine environment in the vicinity of shipyards and marinas. In response to these concerns, in 1988, Congress passed the Organotin Antifouling Paint Control Act of 1988 (“OAPCA”).<sup>5</sup> OAPCA, and the state and federal regulations that followed its passage, were promulgated with the intent of reducing the amount of TBT loading to the environment while at the same time permitting the continued use of TBT based paints on large ocean going vessels where the economic benefits of such paints are manifest. OAPCA also required both the EPA and the Navy to independently perform sampling of the water column, tissues of marine organisms and sediments over a ten year period to determine whether the OAPCA mandated regulatory restrictions on TBT use actually resulted in reduced TBT concentrations in the marine environment. OAPCA at §§ 7(a), (c),(e) and 8(b). EPA and the Navy were further required to periodically report the results of these studies to the Congress. *Id.* EPA’s statutory obligation to monitor and report concentrations of TBT in the marine environment pursuant to OAPCA expired in June of 1998. *Id.*

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<sup>1</sup> On September 1, 1999, Witco Corporation merged with Crompton & Knowles, Inc. to form a new corporation named “CK Witco Corporation.” Since CK Witco is successor in interest to Witco Corporation, in the interest of simplicity, CK Witco is referenced throughout this document even in respect of events involving Witco Corporation that pre-date September 1, 1999.

<sup>2</sup> As used herein, the term “TBT” refers to a variety of compounds which include bis(tributyltin) oxide and tributyltin methacrylate and the corresponding acrylic and/or methacrylic copolymers.

<sup>3</sup> TBT based marine paints permit ships to remain in service for 5 to 7 years between dry dockings. By comparison, ships using the next best alternative paints must be dry docked and repainted every 3 to 4 years.

<sup>4</sup> In 1988 EPA estimated that TBT based paints provided an estimated \$318 million per year savings to U.S. commercial vessels over copper based paints. October 4, 1988, EPA Notice of Intent to Cancel, 53 FR 39022. In 1998, Michael A.Champ, a research scientist with Texas A&M University, College Station and a former senior adviser to the EPA, estimated that the annual fuel savings due to TBT based paints are about \$3 billion worldwide. *Chemical & Engineering News*, Vol. 76 No. 17, 1998. He further estimated that the less frequent dry docking time required for ships painted with TBT based paints represents savings of about \$2.7 billion for the world’s commercial fleet.

<sup>5</sup> A copy of OAPCA is attached as Exhibit A.

In 1989, EPA issued a data call-in to CK Witco and Elf Atochem (the "1989 DCI")<sup>6</sup> pursuant to its authority under the Federal, Insecticide, Fungicide and Rodenticide Act, 7 U.S.C.A. §§ 136-136y, ("FIFRA").<sup>7</sup> The 1989 DCI requires the Companies to monitor, for ten years, TBT concentrations in the water column, sediments and the tissues of marine organisms at certain specified areas in the Great Lakes and the inter-coastal waterways of the United States.<sup>8</sup> The stated purpose of the 1989 DCI was to "measure the adequacy of the current regulatory action to protect non-target organisms by reducing the existing levels of tributyltin residues." 1989 DCI at p. 3.

The Companies have, thus far, gathered seven and one half years of data pursuant to the 1989 DCI. These data clearly indicate that there has been a downward trend in TBT concentrations in the marine environment. These data are consistent with data gathered by the U.S. Navy, the National Oceanic and Atmospheric Administration ("NOAA") the National Status and Trends ("NS&T") Mussel Watch, the EPA and other researchers both in the United States and around the world which also confirm such reductions.<sup>9</sup> In short, the 1989 DCI testing conducted by the Companies and others confirms that the restrictions on the use of TBT have been highly successful in reducing the existing levels of TBT residues. Further testing pursuant to the 1989 DCI is, therefore, unnecessary to achieve its stated goal of determining whether the regulations in respect of TBT have had a beneficial environmental impact.

In light of the foregoing, and after extensive consultation with the EPA, the Louisiana Department of Environmental Quality (the "LDEQ") and others, the Companies propose to voluntarily perform a project pursuant to EPA's Project XL Program (hereinafter, the "Project"). Specifically, in exchange for immediate and complete relief from any further obligations under the 1989 DCI, CK Witco will reduce by 15% volatile organic compound ("VOC") and hazardous air pollutant ("HAP") emissions from its Taft, Louisiana Plant and Elf Atochem will sponsor research into the development of

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<sup>6</sup> A copy of the 1989 DCI is attached as Exhibit B. Note: The attached copy of the 1989 DCI is addressed to M&T Chemicals, Inc. which Elf Atochem later acquired.

<sup>7</sup> The 1989 DCI has been amended several times since its initial issuance. The current monitoring protocol and the 1989 DCI amendments are attached as Exhibit C.

<sup>8</sup> The 1989 DCI also required the Companies to provide TBT coating efficacy data. It is the Companies' understanding that EPA is not requiring the Companies to develop any further efficacy data pursuant to the 1989 DCI.

<sup>9</sup> The NS&T program continues to show declines in TBT concentrations in bivalves. O'Connor 1996; O'Connor Pers. Comm. November 1999. The U.S. Navy program revealed steady declines in sediments, surface water and bivalves during its tenure. Seligman et al. 1992; U.S. Navy and U.S. EPA 1997. The monthly monitoring program in Chesapeake Bay, Virginia conducted by the Virginia Institute of Marine Science continues to show declines in TBT concentrations. Unger 1999 presentation at SETAC. In addition, researchers in Australia, Canada, France, Japan, New Zealand, Switzerland, and the United Kingdom have also noted declines in TBT concentrations in various media in the marine environment.

nonbiocidal antifouling marine coatings.<sup>10</sup> As is explained in greater detail below, this Project will have “superior environmental performance” and also satisfies all other Project XL criteria.

## 2.0 Project Background

On September 30, 1999, CK Witco submitted a letter to Lisa Lund, EPA’s Deputy Associate Administrator for Office of Reinvention, proposing to voluntarily reduce permitted HAP and/or VOC emissions from its Taft, Louisiana plant in exchange for relief from the 1989 DCI monitoring requirements.<sup>11</sup> In the weeks that followed, EPA indicated that the proposed project could go forward only if Elf Atochem also agreed to participate. Shortly thereafter, the Companies began collaborating with one another to formulate a joint Project XL proposal. In addition, the Companies initiated extensive consultations with the EPA, the LDEQ, the U.S. Navy and others in an effort to develop an optimal project proposal.

On November 15, 1999, the Companies met with Marcia Mulkey, members of her staff at the EPA Office of Pollution Prevention and Toxic Substances (“OPPTS”), Lisa Lund, Adele Cardenas of EPA Region VI and several others to discuss the Companies’ joint Project XL proposal. At this meeting, after providing a brief historical overview of regulatory issues relating to the use of TBT and tin free alternatives in marine paints, the Companies proposed the following two pronged project in exchange for complete relief from any further obligations under the 1989 DCI:

CK Witco will reduce by 15% its VOC and HAP emissions from its Taft, Louisiana Plant. Elf Atochem and CK Witco will work with the EPA to agree upon and implement an effective product stewardship program to further reduce the release of TBT into the environment and/or improve analytical techniques.

A copy of the Companies’ slides used as presentation aids at the November 15, 1999 meeting is attached as Exhibit E.

Following the Companies’ brief presentation, Marcia Mulkey voiced support of CK Witco’s offer to voluntarily reduce air emissions at its Taft plant. She also stated that she could support a product stewardship project as part of an XL proposal, provided it was not inconsistent with the

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<sup>10</sup> CK Witco’s primary point of contact for this Project is Jim Nortz, Senior Environmental Counsel. Jim’s direct dial is (203) 552-2806. His E-mail address is nortzji@ckwitco.com. Elf Atochem’s primary point of contact for this Project is John Batt, Director – Product Stewardship, Organotins Industrial Specialties. John’s direct dial is (215) 419-5071. His E-mail address is jbatt@ato.com.

<sup>11</sup> The CK Witco letter to Lisa Lund is attached as Exhibit D.

anticipated international ban of TBT based marine paints and/or assisted in preparing for the ban. However, Ms. Mulkey asked the Companies if they would consider including a voluntary reduction or phase out of TBT production, prior to an anticipated international ban of TBT based antifouling paints,<sup>12</sup> as a component of their project proposal. The Companies responded by indicating in very clear terms that they were not interested in including such an element in the proposed project. The Companies explained that lost profits from a voluntary phase out of TBT prior to an international ban would far exceed any savings the Companies might realize as a result of relief from the 1989 DCI.

At the conclusion of the November 15, 1999 meeting, the Companies and EPA agreed to take several steps to advance further the development of a worthwhile project proposal that would achieve environmental performance clearly superior to that resulting from the 1989 DCI mandates. Specifically, CK Witco agreed to meet with the LDEQ and representatives of EPA Region VI to discuss in greater detail the Taft Plant air emission reduction schedule. In addition, OPPTS and the Companies agreed to meet to conduct a "brainstorming session" with the objective of determining the best means of further reducing the release of TBT into the environment.

On December 1, 1999, CK Witco met with L. Hall Bohlinger, SC.D., Deputy Secretary of the LDEQ, several members of his staff and representatives from EPA Region VI. At this meeting, CK Witco provided an overview of the Companies' proposed Project as well as a detailed technical description of the means by which CK Witco planned on reducing VOC and HAP emissions at its Taft plant.<sup>13</sup> On December 3, 1999, CK Witco sent Dr. Bohlinger a letter summarizing the air emission proposal and seeking his support for the Project.<sup>14</sup> On December 14, 1999, Dr. Bohlinger sent a letter to CK Witco indicating that the LDEQ would strongly support the Project XL Proposal as outlined in the December 3, 1999 letter if real reductions in the emissions of pollutants to the air are achieved.<sup>15</sup>

On December 14, 1999, the Companies met with OPPTS and Region VI representatives, Lisa Lund and others to conduct the "brainstorming session" in respect of further reducing TBT releases to the environment which was agreed to at the November 15, 1999 meeting. At this meeting, the attendees engaged in a wide-ranging discussion of the likely continued sources of TBT in the environment with an eye toward determining the best measures that might be employed, as part of the proposed Project, to abate such continuing sources.<sup>16</sup> Based, in part, on the insights gained through

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<sup>12</sup> For several years now the International Maritime Organization (the "IMO") has been deliberating about whether and when there should be a ban of TBT based marine paints. The ban being discussed today would halt further application of TBT based marine paints by 2003 and require TBT based paint to be removed from or encapsulated on all vessels coated with such paints by the year 2008.

<sup>13</sup> Presentation aids used at the December 1, 1999 meeting are attached as Exhibit F. These include a diagram of the Taft plant and a schematic diagram of the proposed project.

<sup>14</sup> CK Witco's December 3, 1999 letter is attached as Exhibit G.

<sup>15</sup> Dr. Bohlinger's letter is attached as Exhibit H.

<sup>16</sup> Our December 14, 1999 discussion began with detailed consideration of a number of issues relating to TBT based paint. These included but were not limited to the following:

this discussion, the Companies proposed a number of measures that could be taken to reduce further the release of TBT to the environment. These included but were not limited to the following:

Development and dissemination to dockyards and marinas information relative to best practices in the handling (including application and disposal) of TBT based paints. The Companies proposed to develop such information in conjunction with the EPA and others and to disseminate it nation-wide through written materials, informational videos and by sponsoring training sessions at locations where TBT based paints are removed and applied.

Taking steps to reduce or eliminate the illegal or inappropriate use of TBT based paints in fresh water and near coastal marinas. These proposed measures included distribution of information concerning restrictions on TBT based paint use and/or the sponsoring of law enforcement activities designed to enhance enforcement of current regulatory restrictions.

Development and implementation of strategies for addressing the disposal of potentially large amounts of TBT based paint waste which is likely to be generated in the event of an international ban of TBT based paints. Although ship owners periodically remove TBT paints from their vessels, given the nature of TBT based paints, they need only remove the outermost portion of the paint before re-coating the hull. In the event of a ban of TBT based paints, ship owners may be required to remove all the TBT based paint from their vessels prior to re-painting with a TBT free paint. Even if ship owners are allowed to encapsulate existing TBT based coatings by painting over them with TBT free coatings, TBT disposal issues will still have to be addressed when such vessels are ultimately decommissioned.

Development of a research partnership with the U.S. Navy or others to fund research into "second generation" TBT free marine paints based on non-stick technologies that are biocide free. In anticipation of an international ban of TBT based marine paints, the Companies and many others are currently spending millions of dollars to develop "first

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- C What, if any, current significant sources of TBT remain? Which of these sources result in the greatest threat to the marine environment? Are there projects that could be initiated now that might abate the release of TBT to the environment from such sources?
  - C What, if any current opportunities are there for the Companies to participate in current efforts to find innovative TBT alternatives?
  - C What, if any, environmental impacts might occur during a transition to TBT-free marine paints following an international ban of TBT based paints? What, if any, projects might be launched today to mitigate any such environmental impacts? Is there a need to develop new practices to manage TBT waste that might be generated and disposed of during the transition period?
  - C What, if any, sources of TBT releases to the environment might continue even following an international ban of TBT based marine paints? What, if any, steps can be taken today to mitigate such releases?

generation" TBT free marine paints that are as effective as TBT paints. However, virtually all of these first generation TBT free marine paints require the use of biocides. By comparison, second generation TBT free paints are based on "non-stick" technologies that are biocide free. To date, neither CK Witco nor Elf Atochem have invested any significant resources toward the development of second generation TBT free marine paints. In addition, aside from this proposed XL Project, the Companies currently have no plans to make significant investments in such non-stick technologies for marine coatings.

In the course of our discussions with the EPA, OPPTS representatives responded to the first three proposals outlined above by indicating that they perceived them to be of limited benefit to the environment. OPPTS stated that best practices in disposing of TBT based paint wastes are already specified in existing state and federal regulations and that the EPA has distributed instructional literature which was sufficient to apprise ship yard operators and workers of how to handle such wastes responsibly. OPPTS acknowledged that current and future illegal use of TBT based paint was of concern, especially in the event of an international ban of TBT based marine paints. Nevertheless, OPPTS stated that law enforcement issues in respect of illegal use of TBT based paints, before and after a ban of such paints, were being discussed on an international level, and that additional resources devoted to law enforcement from the Companies would have little beneficial impact. OPPTS observed that shipyards were a continuing source of TBT to the environment but stated that they did not anticipate significant increases in TBT releases from such sources in the event of an international TBT paint ban. Consequently, OPPTS opined that Company resources devoted to the development and implementation of strategies for addressing the disposal of TBT based paint waste, which is likely to be generated in the event of an international ban, would not result in an appreciable decrease in TBT releases to the environment.

On several occasions during our December 14, 1999 meeting, OPPTS representatives also stated that they desired the Companies to make voluntary reductions in TBT production, prior to an international ban, a "central" part of the Project. The Companies responded, as they did at the November 15, 1999 meeting, by indicating that they were not interested in including TBT production reductions in the Project for two reasons. First, the Companies' voluntary reduction of TBT production would not result in a net reduction of the world's TBT supply and use desired by the EPA. The Companies are not the only producers of TBT for use in marine paints. Songwon Co. Ltd., a Korean company, not a party to the proposed Project, also manufactures TBT for use in marine paints and currently has the capacity to swiftly increase its TBT production to make up any shortfall in world TBT supplies that would result from the Companies' reduced TBT production. Consequently, any reduction of TBT production by the Companies would result in no environmental benefit and would, therefore, fail to meet a quintessential Project XL criterion. Second, even a modest voluntary reduction of TBT production would result in lost revenues to the Companies that far exceed any savings associated with the relief sought from the 1989 DCI. Consequently, OPPTS's proposal that the Companies voluntarily reduce TBT production would be inconsistent with the second Project XL criterion which mandates

that XL projects “produce cost savings or economic opportunity, and/or result in a decrease in paperwork burden.” Regulatory Reinvention (XL) Pilot Projects, 60 Fed. Reg. 27,282-27,291 (1995).

When the discussion at the December 14, 1999 meeting turned to the development of second generation TBT free marine paints, OPPTS representatives indicated that such biocide free paints were an ideal alternative to TBT based paints or other first generation TBT free substitutes which contain biocides. However, OPPTS expressed some concern about a Project XL based, in part, on research into biocide free marine paints given the uncertainty that such research would yield effective results. Notwithstanding this concern, it was agreed that, following the meeting, the Companies would contact Dr. Robert Brady of the U.S. Navy's Research Laboratory to discuss whether it would be possible for the Companies to collaborate with him in the further development of second generation marine paints.

On December 14, 1999, the Companies contacted Dr. Robert Brady. Dr. Brady has been working at the Naval Research Laboratory for 17 years on biocide free antifouling coatings for ship hulls.<sup>17</sup> After providing Dr. Brady an overview of the proposed Project, the Companies asked Dr. Brady whether the Companies' support of his research into biocide free marine paints would be of assistance to his continuing research effort. Dr. Brady indicated that such support would be welcome and of great assistance in advancing the science of biocide free marine coatings. He stated that he was actively seeking industrial partners to work with him to advance his research. He also acknowledged that CK Witco and Elf Atochem were uniquely positioned to render such assistance because of their extensive familiarity with marine coating technologies, and because of their preeminence in the development and production of silicones and fluoropolymers which are likely to serve as the basis for second generation antifouling paints.

On December 16, 1999, Dr. Brady forwarded a letter to CK Witco reiterating his desire to work with the Companies.<sup>18</sup> In his letter, Dr. Brady stated that, to his knowledge, the Department of Defense is not investing in the development of nontoxic antifouling marine coatings at the present time. See Exhibit I. He further indicated that laboratory work performed to date gives him the "confidence that a practical nontoxic antifouling coating will be made" and that "a Navy-Industry joint effort will certainly advance the scientific foundation on which these coatings are based." *Id.*

After carefully considering all options discussed during the December 14, 1999 meeting, and OPPTS's informative responses to the Companies' proposals, the Companies have elected to make nonbiocidal antifouling coatings research the second prong of their Project proposal. In addition to

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<sup>17</sup> Attached as Exhibit I is a paper authored by Dr. Brady entitled “Clean Hulls Without Poisons: Devising and Testing Nontoxic Marine Coatings.” This paper describes the extensive laboratory and fieldwork conducted during the past eighteen years on a variety of fluorinated coatings and silicone coatings and describes criteria for formulating successful nonbiocidal coatings.

<sup>18</sup> Dr. Brady's letter is attached as Exhibit J.

being an ideal pollution prevention project which fits well with the Project XL philosophy, it is entirely consistent with Marcia Mulkey's request that the second project component "assist in preparing for the anticipated ban of TBT based paints." Few projects could assist in preparing for a TBT paint ban better than investing now in the development of biocide free alternative ship coatings.

### 3.0 Project Description

In exchange for immediate and complete relief from any further requirements under the 1989 DCI, the Companies propose to perform a Project XL with the following elements:

A Voluntary reduction by 15 percent of HAP and VOC emissions at CK Witco's Taft, Louisiana Plant that are not required by any law, regulation or permit; and

Provision of financial resources and/or technical assistance to the Naval Research Laboratory's biocide free antifouling marine coatings research program.

Each of these Project elements is described in greater detail below.

#### 3.1 The Taft Air Quality Improvements

CK Witco operates a chemical manufacturing plant in Taft, Louisiana (the "Taft Plant"). The Taft Plant is a "minor" air emission source with total permitted VOC emissions of approximately 79 tons per year and total permitted HAP emissions of approximately 24 tons per year. The Taft Plant has four major operating units referred to as: the "Tin Unit" the "Thiochemical Unit," the "Epoxy Unit" and the "Mixed Metals Unit." These operating units manufacture a wide variety of products that are used in the production of vinyls, PVC plastics, dyes, photographic films and thousands of other industrial and consumer products.

As the first element of the Project, CK Witco proposes to install certain control technologies and to make other modifications to two of the Taft Plant's operating units (the Tin Unit and the Epoxy Unit) to reduce by 15 percent the Taft Plant's actual (as opposed to "allowable") total VOC and HAP emissions.<sup>19</sup> In addition, the proposed modification of the Epoxy Unit to reduce VOC emissions will likely also reduce, by approximately 48,000 pounds per year, the production of hazardous waste, which is currently being sent off site for disposal. The project may also result in the reduction of non-

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<sup>19</sup> Calendar year 1999 emissions will be used as a baseline from which to calculate the actual magnitude of these reductions.

hazardous waste, which is currently discharged at the plant through deep well injection. Law or regulation currently mandates neither the emission nor the waste reductions, anticipated by implementation of this Project. In addition, CK Witco is unaware of any anticipated regulatory mandates that would require such reductions in the future.

Although much work remains to design and implement the proposed Tin Unit and Epoxy Unit modifications, CK Witco engineers have completed preliminary conceptual design work for modifications necessary to achieve the desired emission and ancillary waste reductions. CK Witco proposes to reduce by approximately 4 tons per year HAP emissions (methyl chloride, toluene and hexane) from its Tin Unit by the addition of a thermal oxidizer. Under this scheme, HAP emissions would be collected from a number of Tin Unit process vents and ultimately piped to a thermal oxidizer which will vent to an associated scrubbing device that is required to properly control combustion products.<sup>20</sup> CK Witco proposes to reduce certain VOC emissions (heptane) by approximately 12 tons per year by adding an oil scrubber to the Epoxy Unit and by making a number of other modifications which would combine to capture and re-circulate to the unit heptane and other materials. These materials would otherwise be vented to the atmosphere, sent off site as hazardous waste or injected down the Taft Plant's deep well. Preliminary calculations indicate that the reduction in hazardous waste production would be approximately 48,000 pounds per year.

After the final design of the above described unit modifications is completed, CK Witco will agree to abide by permit requirements to operate designated emission control units at specified efficiencies for a minimum specified term of years. Since the Louisiana major and minor source permitting programs have been federally approved, such permit requirements would be both federally and state enforceable.

### 3.2 The Nonbiocidal Antifouling Coatings Research and Development Work

For seventeen years, Dr. Robert Brady, a Research Chemist in the Chemistry Division of the U.S. Navy's Naval Research Laboratory has been working on the development of biocide-free antifouling coatings for ship hulls. Exhibit J at p. 1. These coatings are based on "nonstick" technologies, which rely upon either fluorinated or silicone resins. *Id.* The development of such coatings would represent a quantum leap in marine coating technology. As was mentioned above, currently the most effective antifouling marine coatings are the TBT based marine paints, which may be banned internationally as early as the year 2003. Virtually all other commercially available alternatives

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<sup>20</sup> The scrubber is required to remove hydrochloric acid ("HCL") gas which will be produced in the thermal oxidizer as a result of methyl chloride combustion. The ultimate emissions from the scrubber will be air, carbon dioxide and trace amounts of methyl chloride, hydrochloric acid gas and other combustion products.

for ocean going vessels, as well as advanced TBT substitutes under development by the Companies, involve the use of biocides.

Dr. Brady reports that "some laboratory-unique coatings have performed very well" and have given him "confidence that a practical nontoxic antifouling coating will be made." *Id.* Dr. Brady further states that "[o]ur challenge now is to produce these coatings at a reasonable price from commercially available raw materials." *Id.* However, despite their promise, Dr. Brady reports that, due to federal budgetary constraints, "the Department of Defense is not investing in this technology at the present time." *Id.* at p.2. For this reason, Dr. Brady is seeking partners from private industry to join him in advancing the development of commercially viable nonbiocidal antifouling coatings. *Id.*

As the second element of this Project, the Elf Atochem proposes to offer financial and or technical resources to the Naval Research Laboratory to assist in nonbiocidal antifouling coating development. The exact character of the assistance to be provided under the Project will be determined during Final Project Agreement negotiations.<sup>21</sup> However, the Companies are uniquely positioned to provide such assistance. In addition to having extensive experience in the antifouling marine coating industry, the Companies have expertise in fluorine and silicone technologies. Elf Atochem is an industry leader in the development and production of fluorinated compounds. CK Witco is one of the world's foremost companies in the development and production of silicone based specialty chemicals.

This joint research project with the Navy would be enforceable through a Cooperative Research and Development Agreement ("CRADA"). The CRADA is a standard government contract that could contain provisions obliging one or more of the Companies to perform certain work or provide specified financial assistance in support of a defined research project.<sup>22</sup> The CRADA could also contain provisions which would mandate annual reporting to the EPA by either the Navy or the Companies to keep the EPA apprised of progress being made in the research effort, thus allowing the EPA to ensure that Project XL objectives are being satisfied.<sup>23</sup>

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<sup>21</sup> On January 10, 2000, the Companies met with Dr. Brady to initiate detailed discussions about the character of the research to be performed and the manner in which it will be carried out. Currently, several options are under consideration. These include but are not limited to providing direct financial resources to the Naval Research Laboratory and performing the work in the Companies' respective laboratories with Dr. Brady's assistance. In addition, given the substantial resources currently allocated to perform the Taft emission reduction work, CK Witco has yet to decide whether it will be participating in the nonbiocidal antifouling coatings research portion of the Project.

<sup>22</sup> A copy of a CRADA and information concerning the manner in which the Navy Research Laboratories use CRADA's are attached as Exhibit K.

<sup>23</sup> The CRADA would also specify the manner in which confidential business information generated in the course of the research project would be handled.

## 4.0 The Stakeholder Process

The Project will have several levels of stakeholder participation during FPA development and beyond:

- C The Taft plant will keep its local community apprised of Project developments by periodic communication with its now existing Community Advisory Panel (the “CAP”). Working with the CAP is the Taft Plant’s most effective means of distributing information concerning the Project to assure that all local stakeholders are apprised of the project. CK Witco may also publish notice of the project in local newspapers and provide copies of key documents to local libraries. In addition, CK Witco will continue its close cooperation with EPA Region VI and the LDEQ from the beginning to end of this portion of the Project.
- C Stakeholders in respect of the nonbiocidal antifoulant development portion of the Project will include the U.S. Navy.
- C For general comment, XL proposal and FPA drafts, meeting minutes and other documents will be posted on the web pages of CK Witco, Elf Atochem and the EPA XL Home Page.

While the stakeholder participation program will evolve over the coming weeks, the structure will follow both the guidelines developed for Project XL and build upon the lessons of previous XL stakeholder teams.

## 5.0 The Project XL Criteria

The Project will clearly meet or exceed all Project XL criteria. The Project's satisfaction of each criterion is described in detail below:

### **Project XL Criterion #1: Superior Environmental Results**

Proposed XL projects must demonstrate environmental performance that is superior to what would be achieved through compliance with current and reasonably anticipated future regulatory requirements. Each of the proposed elements of the Project independently satisfy this fundamental Project XL criterion.

As was discussed in the Introduction, data gathered to date pursuant to the 1989 DCI has achieved the 1989 DCI's intended purpose of discerning whether OAPCA and other TBT regulations

have succeeded in reducing TBT concentrations in the environment. It is uncontroverted that TBT concentrations have fallen since OAPCA was enacted in 1988. In addition to the unambiguous downward trend in TBT concentrations observed in data generated pursuant to the 1989 DCI, numerous other studies have reached the same conclusion. Studies conducted by the Navy, NOAA, NS&T and others demonstrate conclusively that there has been a downward trend in TBT concentrations in the marine environment.<sup>24</sup> As a consequence, further data gathering pursuant to the 1989 DCI would be of little or no scientific value.<sup>25</sup> In addition, regardless of its intrinsic value, testing alone does nothing to improve conditions in the environment. By contrast, each element of the proposed Project will provide superior environmental performance beyond that which currently exists.

The Taft HAP and VOC emission reductions will, for obvious reasons, produce immediate and measurable environmental benefits. Such reductions are not required by any current or reasonably anticipated state or federal regulation. Similarly, the proposed nonbiocidal antifouling coating research and development project will have a beneficial environmental impact regardless of its ultimate outcome. If the research results in the development and commercial production of effective nonbiocidal antifouling coatings, which replace coatings containing biocides, fewer toxic substances will be released into the marine environment. Even if the Project's research does not result in such commercial production in the near term, it will hasten the day when such nonbiocidal coatings will become available by advancing the scientific understanding of such coatings. Research into nonbiocidal antifouling coatings is not required by any government mandate and is not currently being funded by the Department of Defense. Consequently, the Navy's nonbiocidal antifouling coating research program would not proceed without support from the Companies provided pursuant to this proposed Project.

An additional benefit of the Project will be a significant reduction in reporting and record keeping for both the Companies and the EPA. The 1989 DCI mandates the generation of significant amounts of data and associated documents. For example, the Companies' annual reports alone, submitted pursuant to the 1989 DCI, which summarize the monitoring program results are typically over 3,000 pages long. Alternatives to the 1989 DCI monitoring program proposed herein would clearly result in a significant reduction in the reporting and record keeping burden currently being borne by both the Companies and the EPA.

### **Project XL Criterion #2: Cost savings and paperwork reduction**

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<sup>24</sup> The NS&T program continues to show declines in TBT concentrations in bivalves. O'Connor 1996; O'Connor Pers. Comm. November 1999. The U.S. Navy program revealed steady declines in sediments, surface water and bivalves during its tenure. Seligman et al. 1992; U.S. Navy and U.S. EPA 1997. The monthly monitoring program in Chesapeake Bay, Virginia conducted by the Virginia Institute of Marine Science continues to show declines in TBT concentrations. Unger 1999 presentation at SETAC.

<sup>25</sup> This is especially true in the case of water column data where current average TBT concentration levels, have fallen below EPA's saltwater quality criterion of 10 parts per trillion and are so close to the detection limit of 5.5 parts per trillion that it is technically infeasible to discern any further downward trend.

The Project will produce cost savings and economic opportunity by allowing the reinvestment of monitoring funds into non-required, not presently planned environmental improvements. While the Companies may or may not save money in the short term, the Companies believe the investments made in each of the Projects' non-required, non-planned environmental enhancements will yield future economic benefits. In addition, as is mentioned above, suspension of the paper intensive, non-productive 1989 DCI monitoring program will produce immediate, direct and significant paperwork savings.

### **Project XL Criterion #3: Stakeholder support**

XL projects are required to have a rich stakeholder process, bringing together existing organizations and a broad range of stakeholders to craft the elements of the FPA.

As described above in "Section 4.0 - The Stakeholder Process," the Project, will involve a range of stakeholders in the development and implementation of each Project element. Potential stakeholders are currently being identified and may include local and national environmental groups, trade associations and neighborhood groups. The Companies' extensive consultation with the LDEQ, the Navy and numerous EPA offices around the country in development of this Project demonstrate a clear commitment to a robust stakeholder process.

### **Project XL Criterion #4: Innovation/Multi-Media Pollution Prevention**

EPA seeks to undertake projects that test innovative pollution prevention and Design for the Environment ("DfE") strategies for achieving environmental results. These strategies may include cleaner production processes, technologies, or management practices. Projects should embody a systematic approach to environmental protection that tests alternatives to several regulatory requirements and/or affect more than one environmental medium. EPA has a preference for protecting the environment by preventing the generation of pollution at its source rather than by controlling pollution once it has been created.

Each element of the Project independently satisfies this criterion. The Taft air emission reduction element will result in pollution reduction in more than one media by reducing both air emissions and non-hazardous waste disposal down an injection well. In addition, the air emission reduction element prevents pollution, in part, by returning to a chemical process VOC's that would be emitted to the air or otherwise disposed of. The nonbiocidal antifouling coating research will, through innovative means, result in pollution prevention by hastening the day when nonbiocidal coatings are used as antifoulants on ship hulls in place of those containing toxic biocides.

### **Project XL Criterion #5: Transferability**

XL projects should test new approaches that could conceivably be incorporated into the Agency's programs or in other industries, or other facilities in the same industry.

Each element of this Project independently satisfies this criterion. Modifications to be made at the Taft plant to achieve pollution reduction, will be unique in some respects and could be used at other facilities. The Tin Unit to which the Taft plant proposes to attach a thermal oxidizer contains a batch (as opposed to continuous) processes which release relatively small amounts of gas per batch. This presents a number of engineering challenges with regard to how to effectively manage such a control device on a batch process to maximize its efficiency while minimizing its operation and maintenance costs. Understandings gained through operation of a thermal oxidizer on the Taft plant batch processes may assist the LDEQ and other facilities in using such technology in similar processes elsewhere.

The nonbiocidal antifouling coating research element clearly achieves this criterion by advancing the science of such coatings in a manner that may ultimately result in worldwide use of biocide free marine coatings.

#### **Criterion #6: Feasibility**

XL projects should be technically and administratively feasible and the project proponents must have the financial capability to carry out the projects.

The Companies believe the Project is feasible and, if granted relief from 1989 DCI requirements, will have the necessary resources to carry it out.

#### **Criterion #7: Monitoring, reporting and evaluation**

Reinvention requires that project proponents identify how to make information about the project, including performance data, available to stakeholders in a form that is easily understandable. Projects should have clear objectives and requirements that will be measurable in order to allow EPA and the public to evaluate the success of the project and enforce its terms. Also, the project should be clear about the time frame within which results will be achievable.

The Project will work with EPA and other stakeholders to build upon successful XL reporting models to create a reporting and communications structure that will assure this criterion is fully satisfied.

#### **Criterion #8: No shifting of risk burden**

XL projects must be consistent with Executive Order 12898 on Environmental Justice. They must protect worker safety and ensure that no one is subjected to unjust or disproportionate environmental impacts.

Each of the Project elements clearly meets this criterion. They are each designed specifically to reduce risks and, by their nature, do not shift risks to workers or any other person.

## 6.0 Request For Immediate Conditional Relief from 1989 DCI Requirements

The current Project scope is premised upon projected savings to the Companies, which would result from immediate relief from the remaining 1989 DCI requirements. The Companies relied upon these projected savings to identify and conceptualize the scope of the Project's various components. Consequently, in the event the EPA grants only partial relief to pending 1989 DCI requirements, the Companies would be forced to reconsider the Project scope to ensure it was commensurate with the ultimate savings the Companies derive from the regulatory relief sought.

In the interest of maintaining the current Project scope, the Companies request that the EPA immediately grant conditional relief from the 1989 DCI requirements pending the outcome of FPA negotiations.<sup>26</sup> In the event that FPA negotiations prove to be unsuccessful, the Companies would either perform all currently remaining 1989 DCI requirements as originally planned or perform some other work as may be agreed upon by EPA and the Companies at that time. Such conditional relief would ensure that the Project scope does not become a "moving target" during FPA negotiations as a result of Project scope reductions necessitated by reduced savings to the Companies. It will also provide the Companies with sufficient assurance to justify the significant investment of resources that may be required to further define Project components, initiate the stakeholder process and participate in FPA negotiations.

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from the 1989<sup>26</sup> DCI. The 1989 DCI was issued pursuant to

EPA's authority under the Federal Insecticide, Fungicide, and Rodenticide Act as amended ("FIFRA"), 7 U.S.C. section 136 (c)(2)(B). FIFRA grants EPA broad discretion to seek from pesticide registrants additional data which EPA deems is required to maintain a pesticide registration. Consequently, EPA can, in its sole discretion, amend or eliminate information requests as it sees fit. This is precisely what has been done on several occasions with the 1989 DCI which has been amended seven times since it was initially issued. See Exhibit C. Consequently, no special rule making is required to grant the relief the Companies seek from the 1989 DCI. The EPA could provide the requested relief merely by sending a letter to the Companies indicating that they can suspend performance of all outstanding 1989 DCI requirements pending the outcome of FPA negotiations.



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