



**Waste Visual Distress Signal Flares Generated by Recreational Boaters**  
**An Environmental Problem Solving Action Plan For Safe Collection and Disposal**

by

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## TABLE OF CONTENTS

Executive summary.....	3
Introduction.....	7
Problem Statement.....	7
History.....	7
Timeline.....	7
Environmental Problem Solving Team.....	9
Measuring and Further Defining the Problem.....	10
Toward a Solution.....	13
Boater Survey Results.....	13
November 9, 1999 Flare Workshop Notes.....	14
January 13, 2000 Flare Meeting Notes.....	16
Regulatory and Permit Concerns.....	17
Early Action and Activities in Florida and the Nation.....	18
Early Action in Florida.....	18
Activities in other Parts of the Country.....	19
The Action Plan.....	20
Recommendations for Collecting VDS Flares.....	20
Recommendations for Disposal of VDS Flares.....	21
Recommendations for Public Education.....	21
Other Recommendations.....	22
Implementing the Plan.....	23
Measuring Success.....	23
Appendices.....	24
I. Vendors.....	24
II. Funding Sources.....	25
III. Flare Manufacturers.....	26
IV. Survey Results from LEPC, USCG, HHW, and boater organizations.....	27
V. Memos for DEP Divisions regarding permit concerns (not yet available)	
VI. Clean Marina Environmental Measures for managing flares (not available in this format)	
VII. Newspaper clippings (not available in this format)	

# **Waste Visual Signal Flares Generated by Recreational Boaters** **An Environmental Problem Solving Action Plan For Safe Collection and Disposal**

## **EXECUTIVE SUMMARY**

This Action Plan summarizes the steps taken to develop recommendations that address the safe collection and disposal of visual distress signal (VDS) flares generated by recreational boaters. The Florida Department of Environmental Protection (FDEP) promotes environmental problem solving (EPS) as a method of addressing important problems that are not solved through normal regulatory or program processes. Any FDEP staff person may nominate an environmental problem. EPS nominations are evaluated by upper management at bi-monthly Mission Control meetings. On March 23, 1999 Mr. Vince Peluso proposed the following for an EPS project:

### **Problem Statement**

*Out of date visual distress flares are being disposed of in an unsafe manner by recreational boaters. Federal law requires private recreational boat owners to purchase and maintain pyrotechnic visual distress flares onboard. In some areas of Florida, no safe means of disposal is available for this reactive household hazardous waste.*

This problem was presented at the April 4, 1999 EPS Mission Control meeting and it was given the “go” by upper management. Mr. Peluso was initially named team leader but shortly thereafter he left FDEP. Ms. Cheryl McKee was asked to take the lead in this problem solving effort.

### **Measuring the Problem**

During the summer of 1999 the EPS flare team conducted research to better define and measure the problem. Ms. McKee’s team included Mr. Edward V. Jeffords, a retired United States Navy (EOD) who originally brought this problem to the attention of FDEP, and Ms. Angela Jackson, a high school intern from Forest Hill High School. The following is a summary of the team’s findings:

- 1) All flares currently on the market are hazardous waste when discarded.
- 2) An estimated 471,736 flares are generated annually in Florida by recreational boaters.
- 3) Approximately 90.3% of the flares generated by Florida boaters are generated by recreational boaters.
- 4) Approximately 63% (265,324) of the recreational boaters in Florida are able take waste flares to a local household hazardous waste (HHW) collection program.
- 5) Boaters (60,901) in four southeast Florida counties (Broward, Miami-Dade, Okeechobee, and St. Lucie) do not have a local household hazardous waste collection program that will accept flares.
- 6) Almost 50% of the boaters surveyed in Palm Beach and St. Lucie Counties did not know that waste flares are hazardous waste.
- 7) Actual boater disposal behavior in Southeast District:
  - 38.5% throw flares in the trash
  - 33.6% keep old flares on board as extras for emergency
  - 18.9% shoot off flares during 4<sup>th</sup> of July or just toss them in the water
  - 5% give them to the fire department
  - 4% take them to HHW collection center
- 8) Most hazardous waste haulers will not accept waste flares for transport.
- 9) Most hazardous waste treatment/storage/disposal facilities (TSDs) in the United States are not permitted to accept waste flares.

**The following flare related incidents were noted during 1999:**

- A large flare washed up on the beach in Palm Beach County during the summer of 1999.
- On Oct 18, 1999 in Palm Beach County a child found a flare in the back seat of his family’s car. He fired off the flare burning the car and injuring all six of the passengers.

**Toward a Solution**

Once the problem was measured and defined, the next step was to work toward solving the problem. Ms. McKee invited participation from a wide variety of interests. Initial ideas for safe flare collection were solicited during the boater survey. The results of the boater survey clearly divided the collection part of the problem into two distinct areas; 1) providing safe collection options, and 2) boater education. Boaters preferred convenient disposal options, such as at boat ramps and marinas and where they buy fuel. They suggested posting signs at boat ramps and putting notices in the vessel registration renewals.

The boater’s collection ideas were included in a survey that was provided to Local Emergency Planning Council (LEPC) members, Florida’s HHW program managers, the United States Coast Guard (USCG), Florida Marine Patrol, flare manufacturers and boating organizations. Workshops were held in November 1999 and January 2000 to collect additional information and develop the following recommendations.

**Recommendations**

#	RECOMMENDATION	AGENCY(S)	COST	TARGET DATE	PRIORIT Y
1	Collect Waste Flares at HHW Collection Site	County HHW	<\$1,000	May 2001	High
2	Provide Collection Sites that are Convenient to Boaters	County, Fire Dept, USCG, Marinas	Variable	None	Low
3	Organize Special Flare Collection Events	County, Fire Dept., Industry, Boater Organizations	Variable	Fall/Winter 2000/2001	Medium
4	Thermal Destruction in a mobile thermal destruction burn unit (MTDU)	State Fire Marshall, County Solid Waste, Fire Dept, Sheriff Bomb Squads	\$2,000 to \$17,800	May 2001	High
5	Provide flare collection and disposal information in annual boater registration renewals statewide	FDEP, County Tax Collectors	\$30,000 to \$50,000	January 2001	High
6	Update Boater guides with flare disposal information	FFWCC, Local Agencies	Minimal	When boaters guides are revised	Medium
7	Post signs	Local Agencies, Boater Organization	Variable	None	Low
8	Create an educational flier	USCG	Variable	None	Medium
9	Article for Press Release	FDEP, County HHW	\$200	June 2000	High
10	Include disposal information in packaging	Manufacturers	Variable	None	High
11	Include flare disposal information in boater safety courses	USCG Auxiliary, Power Squadron	Variable	May 2001	High
12	Create a flare disposal display for use at boat shows and sporting events	FDEP	\$500	September 2000	Low
13	Post Information on a Web Page(s)	FDEP, USCG, etc.	Minimal	September 2000	Medium
14	Track emergency incidents caused by mishandling of flares	National Fire Protection Assn.	Minimal	None	Low
15	Track false distress alerts Coast Guard responds to caused by fired flares	USCG	Minimal	None	Low



### **Recommendations for Collecting VDS Flares:**

- 1. Household Hazardous Waste Collection Site:** Every Florida County HHW Program should collect VDS flares from recreational boaters. Even landlocked counties may receive flares from residents that keep their boats in coastal counties. The waste flares must be stored in closed metal or plastic containers segregated from other HHW.
- 2. Provide Collection Sites that are Convenient to Boaters:** Waste flares could be collected from recreational boaters at marinas, boat ramps, and other locations they frequent. Flares should be stored in closed containers that are clearly marked, supervised, and monitored for public safety. The operator of the collection site must ensure that the flares are not accidentally or intentionally ignited. Due to liability issues this option should only be considered on a case by case basis. The costs would include providing an approved container and added personnel and insurance costs.
- 3. Organize Special Flare Collection Events:** Boat shows and sporting shows that attract large numbers of boaters may be good occasions to invite boaters to bring out of date and damaged flares. Thermal destruction could be arranged with the Florida Fire Marshal or a contractor specializing in explosive materials. Some flare vendors may be willing to provide coupons for the purchase of new flares in exchange for old flares that are brought in for disposal. The costs for organizing a collection event include advertising, personnel, liability insurance, approved storage container, and final disposal costs. Some of these costs might be lowered or avoided by partnering and using volunteers to help.

### **Recommendations for Disposal of VDS Flares:**

- 4. Thermal Destruction in a Burn Unit:** Flares may be destroyed by thermal destruction. Approved mobile thermal destruction burn units (MTDU) may be used for flare destruction after obtaining an emergency burn permit from the FDEP hazardous waste program. The State Fire Marshall owns four single chamber MTDUs that are stationed with their bomb squads in Tallahassee, Pensacola, Tampa and Fort Myers. The State Fire Marshall has offered the services of those bomb squads who will bring their MTDU and expertise to the counties that need to dispose of flares. Many local bomb squads already own MTDUs for disposing of other reactive wastes such as ammunition, tear gas and old fire works. Purchasing an MTDU ranges from \$7,400 to \$26,000. Since the MTDUs are mobile, counties could partner to share the MTDU and the cost. To avoid the cost of purchasing an MTDU and training personnel to conduct burns, the local government may opt to use the free services provided by the State Fire Marshall or pay a contractor to perform the service. One private company charges \$2,000 for the first 150 pounds and \$7 for each additional pound of explosive/reactive waste.

### **Recommendations for Public Education:**

- 5. Provide flare collection and disposal information in annual boater registration renewal:** A flier could be inserted into boater registration renewals mailed by the county tax collectors office. FDEP could develop a generic flier with a blank space for specific flare disposal information for each county. The cost would include the cost of developing and printing the flier and time spent interfacing with the individual county tax collectors and HHW program managers.
- 6. Update Boater guides with flare disposal information:** The Boater Guides for local waterways are funded by the Florida Fish and Wildlife Conservation Commission. These guides are produced with input from local organizations and contain valuable information for boaters. When they run out and are reprinted they could be updated to include the local flare collection information. The Marine

Industries Association and other groups also create boaters guides. They could be asked to include this information when they reprint their guides. The cost to update boaters guides would be minimal.

7. **Post signs:** Educational signs could be posted at public boat ramps, marina docks, at point of sale and other locations frequented by boaters. Many counties have sign shops for creating road signs. Manufacturers could provide generic flare disposal signs for point of sale locations and marinas.
8. **Create an educational flier:** An educational flier could be handed out at locations frequented by boaters including point of sale, boat and sporting shows, and marinas. The flier could be generic and used statewide, or county specific. The flier could also include disposal information for other types of household hazardous waste generated by boaters such as used batteries, mercury containing bilge pump switches, solvents, used oil, etc. The USCG has two educational fliers for flares, one that is used nationwide and one specifically for Florida. These fliers have not been updated in several years.
9. **Article for Press Release:** A press release with collection and disposal information could be provided to various media. It would be important to reach smaller periodicals that target boaters, such as local newsletters put out by boating organizations. FDEP staff could draft an article for press release. The outreach/media specialist in each FDEP District could fax it to local media.
10. **Place flare disposal information in packaging:** Flare manufacturers could place information on the flares or in the packaging to remind boaters not to toss their out of date flares in the garbage. The notice could include generic information to contact local authorities for proper disposal of household hazardous waste. FDEP could contact flare manufactures to make this request.
11. **Include flare disposal information in boater safety courses:** Power Squadron and USCG Auxiliary provide boater safety courses and printed material for boaters. FDEP could develop a flare disposal information package for these groups so that they could update their course material. The costs would include FDEP personnel time developing the package and the cost of mailing to boater groups.
12. **Create a flare disposal display for use at boat shows and sporting events:** An educational display could be used by FDEP at events that draw large numbers of boaters. Fliers and other handouts could be available at the display. The display board would cost about \$220, the display materials would cost about \$50, and the time needed to create the display would be less than 20 hours.
13. **Post Information on a Web Page(s):** Proper flare disposal information could be placed on web sites frequented by boaters. FDEP could supply the flare disposal information. This would require some FDEP personnel time and the cost of postage.

#### **Other Recommendations:**

14. **Track emergency incidents caused by mishandling of flares:** Fire fighters track incidents on a national database. This database does not include “flares” as a choice for “cause of incident.” Fire fighters must enter “other” as a choice for “cause of incident.” The database should be modified so those incidents caused by mishandling of flares are tracked.
15. **Track false distress alerts Coast Guard responds to caused by fired flares:** The data base the USCG uses to track false distress alerts does not allow an entry to describe the cause. It is difficult to know how many false alerts are caused by flares that are fired without cause. This data base could be updated to include choices for cause of false alert such as VSD Flare, EPIRB, Radio Contact, etc.

## INTRODUCTION

The United States Coast Guard (USCG) requires all boats of certain types and sizes (e.g., motorized boats 16 feet and above in length; sailboats without motors 26 feet and above), locations (e.g., coastal waters), and all boats of any length operated at night, to have a minimum of three visual distress signal (VDS) devices on board. Pyrotechnic VDS flares that are currently on the market have an expiration date of 42 months after the manufacture date. Expired flares may still be used in emergency situations, but they no longer satisfy the USCG requirement. Discarded VDS flares generated by recreational boaters are household hazardous waste. Mismanagement of waste VDS flares poses a public safety hazard and potential harm to the environment. The requirement to carry flares on board is a federal mandate. The federal government is not providing a solution to problem of collecting and disposing of the estimated 471,736 out of date VDS flares generated by recreational boaters in Florida. On March 23, 1999 Mr. Vince Peluso proposed the following problem for an environmental problem solving (EPS) project.

### Problem Statement

*Out of date visual distress flares are being disposed of in an unsafe manner by recreational boaters. Federal law requires private recreational boat owners to purchase and maintain pyrotechnic visual distress flares onboard. In some areas of Florida, no safe means of disposal is available for this reactive household hazardous waste.*

The problem was presented at the April 4, 1999 EPS Mission Control meeting and it was given the “go.” Mr. Peluso was initially named team leader but shortly thereafter he left the FDEP. The problem was reassigned to Ms. Cheryl McKee.

### History

Mr. Ed Jeffords, a retired United States Navy EOD, brought this problem to the FDEP’s attention in 1997. Mr. Peluso worked with Mr. Jeffords to find a solution, but they kept meeting with resistance. They were successful in encouraging the St. Lucie County Sheriff Department to hold two flare collection events. Their attempt to procure state funding for a pilot project fell through. Mr. Peluso decided to nominate this problem for an EPS project.

### Timeline

	<u>ENVIRONMENTAL PROBLEM IDENTIFIED</u>
1997	Mr. Jeffords contacts FDEP regarding the lack of safe disposal options for flares.
March 23, 1999	Mr. Peluso nominates VDS Flares Generated by Boaters as an EPS project.
April 2, 1999	VDS Flare EPS project gets the GO from Mission Control.
	<u>ENVIRONMENTAL PROBLEM FURTHER DEFINED AND MEASURED</u>
May 7, 1999	Mr. Peluso holds first meeting/teleconference with EPS team, Ms. McKee and Mr. Jeffords attend. The team decides how to measure the problem.
May 21, 1999	Mr. Peluso resigns from FDEP and Ms. McKee becomes the project team leader.
June-August	Ms. Angela Jackson conducts telephone surveys to measure the problem. The team conducts a boater survey. Mr. Jeffords gathers information on flare types and disposal methods.
July 22, 1999	Teleconference between Mr. Jeffords, Ms. Jackson and Ms. McKee to report progress and tie up loose ends prior to the August 6 Mission Control meeting.
August 6, 1999	Report problem measurement findings to Mission Control.



## ENVIRONMENTAL PROBLEM ACTION PLAN DEVELOPMENT

August 19, 1999	Ms. McKee, Mr. John Moulton and Mr. and Mrs. Jeffords give a VDS Flare presentation to Representative Ken Fruit.
September 30, 1999	Ms. McKee and Mr. Jeffords present Flare EPS project to 18 members of the Treasure Coast Local Emergency Planning Council (LEPC). LEPC members complete action plan development survey.
October 1, 1999	REMTC thermal destruction demonstration at Brevard County landfill.
October 8, 1999	Ms. McKee provides EPS Mission Control with a written update.
October 15, 1999	Workshop invitation with action plan development survey sent to over 200 people.
October 18, 1999	Six people are burned when a child discharges a flare inside a car in Lake Worth.
November 9, 1999	45 people attend the Flare Workshop and burn demonstration at Palm Beach County Solid Waste Authority (PBC SWA).
December 6, 1999	Ms. McKee gives a VDS flare EPS update to Mission Control.
December 15, 1999	Ms. McKee presents VDS Flare EPS project to South Florida LEPC.
December 27, 1999	Ms. McKee and Mr. and Mrs. Jeffords meet to work on draft action plan.
December 29, 1999	Meeting invitation with draft action plan executive summary sent to 220 people.
January 13, 2000	Twenty people attend flare meeting to review first draft of action plan.
February 7, 2000	Ms. McKee presents second draft of flare disposal action plan to Mission Control.
March 9, 2000	Raoul Clarke of FDEP Waste Division met with Steve Smith of the State Fire Marshal to discuss a partnership to burn waste flares generated by boaters.
March 17, 2000	FDEP posts 3 <sup>rd</sup> draft of action plan on their web site for public review. 220 notices are sent to interested parties requesting input on the 3 <sup>rd</sup> draft.
March 29, 2000	FDEP Air Division releases first draft of flare burning policy for inhouse review.
April 24, 2000	Ms. McKee gives a VDS flare EPS update to Mission Control.
May 4, 2000	Ms. McKee gave a flare collection presentation to HHW managers at their annual meeting in Ft. Myers Beach. Lois Rose, Sarasota County HHW manager gave a presentation on the flare collection program she organized for her county using FDEP innovative grant money.
May 18, 2000	Ms. McKee gave a flare collection presentation to the Treasure Coast LEPC.
June 14, 2000	Ms. McKee gave a flare collection presentation at the South Florida LEPC HazMat 2000 conference in Ft. Lauderdale.
June 26, 2000	Ms. McKee gives a VDS flare EPS update to Mission Control.
July 2000	FDEP conducts telephone survey of HHW managers throughout the state to determine any change in flare collection options for boaters.
July 14, 2000	The Final Draft of the action plan was posted on the Southeast District web page.

## **Environmental Problem Solving Team**

### **Team Leader:**

Cheryl McKee, FDEP Southeast District, Outreach Program

### **Team Members:**

Frank Amodeo, General Manager, Orion Safety Products

Odessa Bowen, Miami-Dade County Household Hazardous Waste Program

Dee Brown, Orion Safety Products

Raoul Clarke, FDEP Tallahassee Hazardous Waste Program, State Coordinator

Ron Crowder, ACR Electronics and South Florida Marine Industries Association

Cleaette Fritz, Broward County Household Hazardous Waste Program

Suzette Hartman, USCG, Washington D.C.

Dwight Hoffman, Palm Beach Sail and Power Squadron

Fred Hovercamp, Reactive & Explosive Materials Training Corp. (REMTC), President

Angela Jackson, Forrest Hills High School, student intern

Ed Jeffords, Retired United States Navy EOD

Sherrill Jeffords, concerned citizen

Jan Kleman, FDEP Household Hazardous Waste Coordinator

Paul Laska, Martin County Sheriff

Mark Laurent, Miami-Dade County Household Hazardous Waste Program

Terry Long, FDEP Southeast District Air Program

Bob Madden, Palm Beach County Solid Waste Authority, Household Hazardous Waste Program

Patrick McDermott, REMTC

Leonard McVey, Retired United States Navy EOD

Ann Meador, FDEP Southeast District Emergency Response

Patricia Millner, Martin County Fire Rescue

Bruce Mitchel, FDEP Air Division, Tallahassee

Dana Morrison, FDEP Division of Law Enforcement

E.W. Phillips, Florida Fish and Wildlife Conservation Commission

Margaret Bonds Podlich, Director, Boat US Clean Water Trust

Sgt. Rob Roberts, West Palm Beach Police Department Bomb Squad

Lois Rose, Sarasota County Household Hazardous Waste Program

Ajaya Satyal, Palm Beach County Health Department

Ken Schuster, United State Environmental Protection Agency, Washington D.C.

Ron Simmons, Florida Marine Patrol

Steve Smith, Florida State Fire Marshal

Tony Smith, ACR Electronics and South Florida Marine Industries Association

Ron Sperry, Dade County Fire Department Haz Mat

Bob White, Imanna Laboratory, Inc.

Donald Widing, West Palm Beach Fire and Rescue Department

Robert L. Williams, USCG, Miami

## **MEASURING AND FURTHER DEFINING THE PROBLEM**

During the initial phase of the environmental problem solving exercise Ms. McKee worked closely with Mr. Jeffords further defining and measuring the problem. Ms. Angela Jackson, a summer intern from the Forest Hill High School Science Academy, conducted various surveys to collect the data used to measure this problem. The first problem measurement meeting was held on May 7, 1999. The team decided to try to answer the following questions:

1. What are the different types of Flares? Are all of them Hazardous Waste?
2. How many flares are sold annually in the District? Florida? What percentage of these are sold to recreational boaters?
3. How many flares are generated annually in the District? Florida? What percentage are generated by recreational boaters?
4. Quantify how many household hazardous waste flares are actually being properly managed and disposed of in the District? Florida?
5. How many hazardous waste haulers currently accept outdated flares?
6. How many hazardous waste transfer/storage/disposal facilities (TSDs) in the Southeast District, Florida, USA are permitted to accept outdated flares?
7. Are there documented cases of environmental harm or emergency incidents caused by mismanagement of flares? If yes, how many? Can these incidents be directly tied to household hazardous waste, or is it impossible to know which were commercially generated?
8. What are the appropriate waste disposal methods for VDS flares?

A meeting was held on July 22, 1999 to assess the team’s progress. The following results of measuring the problem were presented at the Southeast District EPS Mission Control meeting on August 6, 1999.

FLARE FACTS:

**1. What are the different types of Flares? Are all of them Hazardous Waste? (Mr. Jeffords)**

Various types of VDS flares on the market:

(does not include highway flares, wilderness flares or Orion's fire starter flare)

- |   |                                       |
|---|---------------------------------------|
| Smoke hand-held signal flares                   | Orange smoke canister flares          |
| Red hand-held flares                            | Floating smoke canister flares        |
| Hand-held red aerial flares (Star-Tracer)       | Floating orange flares                |
| Hand-held Skyblazer smoke, red and white flares | Red parachute flares                  |
| Floating smoke canister flares                  | 16.5mm red aerial flares              |
| White collision warning flares                  | 25mm red parachute aerial flares      |
| White parachute flares                          | 12 gauge white marine practice flares |
| 25mm red aerial flares                          | 12 gauge red aerial flares            |
| 12 gauge white aerial flares                    |                                       |
| 12 gauge red marine meteor flares               |                                       |
| Pocket rocket marine launcher red aerial flares |                                       |
| Orange hand-held flares                         |                                       |
| White hand-held flares                          |                                       |



All the flares listed above are household hazardous waste if discarded due to reactivity, for being oxidizers, and possibly for barium content.

**2. How many flares are sold annually in the District? Florida? What percentage of these are sold to recreational boaters?** The team did not have the resources to answer this question.

**3. How many flares are generated annually in the District? Florida? What percentage are generated by recreational boaters? (Mr. Jeffords)**

According to 1998 boater registration statistics provided by the Florida Department of Revenue and the average time from date of purchase to flare expiration that a boater would keep a flare (2 years) Mr. Jeffords calculated the following: 1) Recreational boaters in Florida generate approximately 471,716 expired flares annually. 2) Of that number, approximately 108,882 expired flares are generated in Southeast Florida (this does not include flares generated by visiting boaters). 3) If you include flares generated by commercial boaters, the total number of expired flares comes to 522,256. Recreational boaters generate 90.3% of all flares generated by boaters.

Florida

$$(419,321 \text{ registered boats } 16\text{ft or more})(3 \text{ flares}) / 2 \text{ years} = 628,981.5 \times 0.75 = \underline{471,736}$$

Southeast Florida (St. Lucie, Okeechobee, Martin, Palm Beach, Broward, Miami-Dade)

$$(96,784 \text{ registered boats } 16\text{ft or more})(3 \text{ flares}) / 2 \text{ years} = 145,176 \times 0.75 = \underline{108,882}$$

Percentage of total flares generated by Recreational Boaters ( rec/total = %rec)

$$(33680 \text{ commercial registered boats})(3 \text{ flares})/2 \text{ years} = 50,520$$

$$\text{total flares generated} = 50,520 + 471,736 = 522,256$$

$$\% \text{ of total flares generated by recreational boaters} = 471,736/522,256 = \underline{90.3\%}$$

Note: For calculating flare generation by recreational boaters with motorized boats 16 feet and above in length and sailboats without motors 26 feet and above a fudge factor was built in to account for those boats that do not travel offshore and are not required to maintain a minimum of three flares on board. Mr. Jeffords estimated that 75 % of motorized boats 16 feet or larger and sailboats 26 feet and larger go offshore.

**4. Can we quantify how many household hazardous waste flares are actually being properly managed and disposed of in the District? Florida? (Ms. Jackson)**

a. Number of boaters that have a safe means of disposal in their counties:

1) 63% (265,324) of Florida boaters have a safe means of disposal through their HHW collection program.

2) In the Southeast District 63% (60,901) of the boaters do not have a HHW program that will accept flares.

b. How many boaters realize that waste flares are household hazardous waste?

Almost 50% of the boaters surveyed in Palm Beach County and St. Lucie County did not know that waste flares were hazardous waste.

c. Actual boater disposal behavior in Southeast District:

38.5% throw flares in the trash

33.6% keep old flares on board as extras for emergency

18.9% shoot off flares during 4<sup>th</sup> of July or just toss them in the water

5% give them to the fire department

4% take them to HHW collection center

**How many hazardous waste haulers accept waste flares?** (Ms. Jackson)

Majority of HW haulers Ms. Jackson spoke to do not pick up explosives. DOT requires transporters of explosives to have a special certification.

**6. How many hazardous waste TSDs in the USA are permitted to accept waste flares?**

Majority of hazardous waste TSDs Ms. Jackson spoke to are not permitted to accept explosives.

**7. Are there any documented cases of environmental harm or emergency incidents caused by mismanagement of flares? If yes, how many? Can these incidents be directly tied to household hazardous waste, or is it impossible to know which were commercially generated?**

- Ms. Jackson asked during her telephone surveys of household hazardous waste programs and heard of one incident but was not given any details.
- Ed Jeffords provided newspaper clippings documenting incidents (see appendices).
- A large flare washed up on the beach in Palm Beach County during the summer of 1999.
- Oct 18, 1999 a child fired off a flare in the back seat of a vehicle burning the car and injuring six in Palm Beach County.
  - On July 4<sup>th</sup>, 1998 a boat was destroyed in Port St. Lucie by a fire ignited by fire works which in turn ignited old out of date flares as back ups and had between 25 to 30 flares on board. The Fire Dept. could not contain the fire before they could extinguish the fire.

**8. What are the appropriate waste disposal methods for VDS Flares?** (Mr. Jeffords)

The appropriate waste disposal methods for Marine Visual Distress Signal (VDS) Devices is by an approved method of burning in accordance with State, Federal and Local regulations. There are two methods of approved VDS burning:

- A - Burned in an approved pyrotechnic burn trailer.
- B - Burned in an approved open burn pit by qualified personnel.



There is an alternate method of disposal of the VDS recommended by the U.S. Coast Guard (USCG). They state that you can soak the tube type (hand held) in water for 24 hours and then dispose of into the trash. However, according to testing conducted by Mr. Jeffords, it takes up to 12 to 14 days of soaking to completely saturate the pyrotechnic to make it unburnable. Then there is the problem of disposing of the contaminated water, which may be an environmental and health hazard. Also, the USCG does not recommend any type of disposal for the projected type of VDS. Due to the problems associated with soaking these VDS, the USCG no longer recommends any method of disposal for VDS at present.

The VDS manufacturers state in their Material Safety Data sheets that the materials have significant effects causing irritant to skin, eyes and mucous membrane. By OSHA'S standards, these VDS devices are a class 1.4G explosive. When involved in a fire, do not try to extinguish, must allow to burn, suffocation techniques are not effective and a self-contained breathing apparatus must be worn. Mr. Jeffords' recommendation for public safety and to protect the environment is that VDS devices should be burned in an approved pyrotechnic burn trailer.

## TOWARD A SOLUTION

The results of the measurement phase were presented to Mission Control on August 6, 1999. Once the problem was thoroughly measured the next step was to work toward a solution of the problem. To begin the next step Ms. McKee invited participation from a wide variety of interests. Initial ideas for safe flare collection were solicited during the boater survey.

<b>Boaters ideas to expedite the safe collection/disposal of flares</b>	<b>61 responses from Palm Bch County</b>	<b>8 responses from Martin County</b>	<b>89 responses from St. Lucie County</b>	<b>Totals</b>
Need a place to turn them in		1	36	37
Have collection sites at marinas, ramps and docks, and where boaters buy fuel	20	1	7	28
Exchange for new ones at point of sale	10		1	11
Have Fire Dept. Collect them	2	1	5	8
Collection by the coast guard	3		3	6
Government agency should collect them			5	5
One Central Collection Station		1	2	3
Burn them in controlled environment			2	2
Pick up at hazardous waste station		1		1
Provide a pick up service	1			1
Educate the public	9		1	10
Advertise disposal opportunity	3		2	5
Use for demonstrating proper use	2			2
Put a sign at the boat ramp	1			1
Send out flier with boat registration	1			1
Have a number people can call	1			1
Do not know	8	3	26	37

- 144 people were surveyed at boat ramps, boating stores and boater club meetings in St. Lucie and Palm Beach Counties. Some of those surveyed gave multiple answers to this question (159 answers) Some Martin County residents were surveyed at the Burt Reynolds Park boat ramp in Jupiter.
- Of those surveyed, 101 people identified the need for collection of waste flares. Most of those people wanted the collection to be coordinated by the government, but eleven people thought that the flares should be exchanged for new ones at the point of sale.
- Twenty people identified the need for better boater education on the flare disposal issue.
- Thirty-seven said they had no idea how to solve this problem.

The results of the boater survey clearly divided the collection part of the problem into two distinct areas 1) providing safe collection options, and 2) boater education. Boaters preferred disposal options that are convenient, such as at boat ramps and marinas and where they buy fuel. They also suggested exchanging out of date flares at the point of sale. But boaters pointed out that there was a lack of awareness and that we need to do a better job letting boaters know how to properly dispose of their out-of-date flares. Boaters suggested signs at boat ramps, notices in their vessel registration renewals and other ideas.

The boater's collection and education ideas were included in a survey that was given to LEPC members at their meetings and through mailings. This survey was also mailed to all Florida county HHW programs, the USCG and boater organizations. The survey results are presented in the appendices. Workshops were held in November 1999 and January 2000 to collect additional information and discuss the relative merits and negatives of each potential solution option.

**The following are the issues that were discussed and comments made during the November 9, 1999 workshop regarding the various flare collection options:**

**1. Could boaters' flares be collected at boat ramps, marinas and fueling sites?**

- a. Who would be responsible for the container? Bob Madden of PBC SWA will begin a pilot project providing special boater waste collection containers at six local marinas. Boater wastes will include flares, used batteries and used oil. The SWA will service the containers weekly.
- b. Bristol flares sponsored a flare collection and disposal program in Seattle. Flares were collected at the USCG station. Bristol provided 10% rebate coupons for the purchase of new flares as an incentive to boaters to bring their out of date flares to the collection site. Boy Scouts were able to earn a badge by publicizing the collection program.
- c. Bad idea to store explosives near fuel.
- d. FDEP hazardous waste inspector thinks household hazardous waste collection sites should be limited for safety reasons.

**2. Should old flares be exchanged at the point of sale?**

- a. Marine supply stores do not want the responsibility and liability of collecting old flares.
- b. RCRA regulator felt that the collection/storage locations of old flares should be limited.
- c. Flare manufacturer thought that it is too much responsibility for boater supply stores. They might just throw the old flares in the trash if they need the storage space for merchandise.
- d. REMTC, the burn unit manufacturer reminded everyone that the old flares are hazardous waste.
- e. SWA - Since new flares are hazardous material and already stored on-site maybe the liability issues could be worked out.
- f. Collection could be limited to the largest stores.
- g. Boater – need to decide how flares will be disposed of before deciding how they will be collected.
- h. Air regulator stressed the need to ensure integrity of waste material and training for personnel at collection site.
- i. The requirement that boaters maintain flares onboard is a federal government mandate. It is unfair to put the burden of collection on the private sector. Need local solutions and partnerships.

**3. Should Fire Departments collect old flares?**

- a. Fire departments do not want to store hazardous material that no one else wants to take.
- b. Fire code development should encourage proactive solutions to this problem (eg. make safe storage of flares allowable).
- c. Need an approved container for collecting flares.
- d. The police department bomb squad collects ammunition. They do not have a collection site other than on explosive cabinet.
- e. Sheriff/emergency responder – there is not enough staff at a fire department to man a collection site for flares.
- f. Household hazardous waste should be collected at HHW collection site.

**4. Should the U.S. Coast Guard collect flares?**

- a. USCG rep – The policies are different in each district, but overall, the Coast Guard does not collect flares or shells.

**5. Should HHW programs collect old flares?**

- a. Miami-Dade County HHW manager said that they have no budget to collect flares, no space to store flares and their waste disposal contractor will not accept waste flares for transport.

- b. Martin County sheriff says that Martin County has a HHW program but no storage space for flares at their HHW site. The sheriff has to remove the flares and other explosives and ammo immediately.
- c. Sarasota County HHW manager said they had no storage capacity for flares and ammo. They invited the fire department and law enforcement to help with the problem. HHW agreed to collect and store flares and purchase (with DEP innovative grant money) a thermal destruction unit. The thermal destruction unit will be stored at HHW site and operated by bomb squad. DEP will not require a permit for burning HHW.

**6. Could out of date flares be used for safety demonstration courses?**

- a. Need to separate good flares from bad flares.
- b. There could be liability issues if flares don't shoot straight and cause damage/harm.
- c. Flare manufacturer – if out of date flares were kept dry they should work just fine.
- d. Flare manufacturer – need to look into other flare programs in Connecticut and Indiana.
- e. The flare manufacturers should put safe disposal information on flare packaging. The manufacturer agreed only if done across the board by all manufactures around the country.
- f. P2 program manager asked what the manufacturers do with off-spec material at their plant. Do they recycle?

**Ideas for Training and Education:**

- 1. Boating clubs could give training and give out information on how to dispose of old flares.
- 2. Darrell Hazagartee, of the Palm Beach Health Dept., discussed that there should be good training of personnel who would be disposing of old flares.

**Disposal Issues:**

- 1. Jim Ayers, of FDEP Hazardous Waste program mentioned water leaching from unit after a burn.
- 3. Are Permits for burn units necessary? What if the burn units treat wastes that are not HHW?



Double Chamber burn unit designed by REMTC



**The following are the issues that were discussed and comments made during the January 13, 2000 meeting regarding the 1<sup>st</sup> draft of this action plan:**

**1. Are out of date flares still functional?**

- a. Explosive material tester – Old flares become unreliable because the initiator becomes unstable. The flare may have a delayed ignition. The user might think the flare is a dud, set it down and walk away from a flare that will have a delayed ignition.
- b. Flare Manufacturer – The climactic conditions in Florida may cause flares to deteriorate sooner than they would in milder climates.
- c. REMTC – Suggested removing the use of out of date flares for demonstration purposes as a recommendation of this action plan. He said that the DEP might incur liability if a flare misfired at a demonstration event. All participants agreed that this recommendation should be removed.
- d. Fire departments can use old flares for fire fighting training.

**2. Can waste flares be soaked in water as a means of disposal?**

- a. Flare manufacturer – Perchlorates from flares can contaminate the water they are soaked in and can also contaminate the leachate in a landfill.
- b. Explosive material tester – The magnesium base in some flares could react if exposed to water.
- c. Everyone agreed that this was not an appropriate method of disposal.

**1. What if stored flares become wet, or flares brought to a collection center are wet.**

- a. The explosive material tester suggested putting the wet flares in mineral oil to reduce the possibility of an accidental reaction.

**2. Can waste flares be burned at the waste to energy plants?**

- a. Household hazardous waste would not require a RCRA permit for treatment.
- b. The company that designed the plant in Broward County has not provided an answer to this question.

**1. What are the flare collection constraints at Miami-Dade and Broward County HHW sites?**

- a. Broward County has no means of disposal and no way to store explosives.
- b. Broward County has a hazmobile that could be used at remote collection sites.
- c. Miami-Dade County has limited space and no way to store explosives.
- d. It was decided that the vendor list should include suppliers of DOT approved explosive storage bins and magazines.

## REGULATORY AND PERMIT CONCERNS

During the EPS process local governments raised concerns regarding permits FDEP and local agencies might require for operating mobile thermal destruction burn units (MTDU) to dispose of flares. Most local governments have other uses for a MTDU that might include hazardous wastes that are not exempt from RCRA regulation. These other wastes include ammunition, fire works, tear gas and mace. These wastes are currently being destroyed after the local agency procures an emergency burn permit from the FDEP Hazardous Waste Section in the local District office. Local governments may also want to destroy VSD flares from commercial sources and traffic flares (which have 5 times less candlepower and no expiration date). These other wastes are beyond the scope of this EPS project, but since the solution to the problem will involve local government, it is important that these issues are considered.

Commercial boats make up 4% of all registered boats in Florida (most cruise ships are registered in offshore countries). The majority of commercial boats registered in Florida would be considered conditionally exempt small quantity generators (CESQG) of hazardous waste. CESQGs are allowed to transport their own hazardous waste. Those counties with HHW programs that also collect hazardous waste from CESQGs could accept waste flares from commercial boats if they are able to store and destroy flares. A RCRA permit would not be required to burn CESQG waste in a MTDU.

The biggest concern is that use of the MTDU would require an air emissions permit. According to a draft letter released by the FDEP Bureau of Air Regulation on June 23, 2000, operators of MTDUs are eligible for a conditional exemption from requiring a permit if they meet the following conditions:

1. The materials that may be thermally rendered harmless are discarded and out-dated flares, pyrotechnics (i.e., firecrackers) and tactical tear gas canisters; and damaged, discarded and/or confiscated small caliber ( $\leq 50$ ; and, includes shotgun shells) ammunition.
2. Thermal heat maybe provided by propane or LP gas.
3. The operations must be conducted in a secure area where public access is restricted.
4. The operations shall not be conducted within a 1000 feet of neighborhoods, school zones, occupied buildings, and populated areas.
5. The operator/owner shall establish and maintain records of the materials thermally treated by date and location; and the records shall be kept for two years and made available for inspection upon request by the Department or its representative.
6. The operation of this activity shall not cause or contribute to an objectionable odor.
7. No other material, other than what is stated in No. 1, can be processed in the MTDU without written authorization from the Department Bureau of Air Regulation and any affected permitting authority.
8. The MTDU is allowed to operate only during daylight hours.
9. The MTDU shall not be operated at an acceptable site for longer than **5** days per calendar month.
10. When relocating and/or prior to operating an approved MTDU, the owner shall notify the appropriate compliance authority at least 24-hours prior to relocating and/or operating the MTDU at a specific site location for purposes of obtaining, at a minimum, verbal approval to relocate and/or operate the MTDU.
11. The MTDU shall be operated in accordance with the manufacturers specifications.
12. The remaining waste material after destruction shall be disposed of in the proper manner and in compliance with all applicable local, state and federal regulations unless exempted. (If ammunition is burned the ash must be tested for heavy metals to determine whether or not it is hazardous waste.)
13. If the conditions on which this exemption are based change, the operator shall notify the Department's Bureau of Air Regulation and the appropriate permitting authority of the proposed changes and request the exemption letter amended.

## **EARLY ACTION AND ACTIVITIES IN FLORIDA AND THE NATION**

Through our surveys and contacts the EPS team learned of various activities for dealing with the flare collection/disposal problem that were being implemented in various parts of the state and the country. Some local organizations had already taken early action or decided to begin working on solving this problem prior to finalization of this action plan. Below are some examples of early action and related activities around the state and the country.

### **Early Action in Florida:**

#### **Clean Marina program**

The Clean Marina workbook that was distributed to marinas October 1999 includes a Marina Environmental Measure for dealing with waste flares (see appendices).

#### **Monroe County**

The Monroe County Sheriff Department is applying to FDEP for Innovative Grant funding to purchase a mobile thermal destruction burn units (MTDU) to destroy flares collected from boaters. Due to Monroe County's remote location it makes sense for the County to thermally treat HHW flares rather than rely on the State Fire Marshall for this service.

#### **Okeechobee County**

The Okeechobee County Fire Department burns waste flares for fire fighter training.

#### **Palm Beach County**

Bob Madden at the Solid Waste Authority (SWA) is placing four storage units at local marinas to store boater generated hazardous waste and used oil. There will be a container for flares. The storage units can be locked for security. The SWA will service the storage units weekly to remove the waste and transport it to the HHW storage area at the landfill.

Bob Madden is spearheading a taskforce to find a solution to managing and destroying reactive waste collected from households (including recreational boaters) and law enforcement. Mr. Madden will also address ammunition and tear gas in the discussions with the various law enforcement agencies that are participating on his taskforce. At issue are safe collection and storage of reactive waste and whether to purchase an MTDU or contract for thermal treatment service

#### **St. Lucie County**

The St. Lucie County sheriff has held two waste flare collection events at five local boat ramps. The bomb squad soaks the flares for twice the amount of time recommended by manufacturers then landfills the residue (soaking is not a recommended disposal method in this action plan). On October 25, 1997 the St. Lucie County Sheriff collected 426 flares, 1 flare pistol, 2 launchers and 2 live grenades for proper disposal. On March 28, 1998 they collected 292 flares, 1 flare pistol and some old det cord.

#### **Sarasota County**

Sarasota County HHW has purchased an MDTU to handle waste flares with money they received from FDEP's Innovative Grant Program. Lois Rose, the Sarasota County HHW manager, said they had no storage capacity for flares and ammo in the County. They invited the fire department and law enforcement to help with the problem. Lois agreed to collect and store flares and purchase (with DEP innovative grant money) the MTDU. The MTDU will be stored at HHW site and operated by bomb squad. FDEP does not require an air permit for burning HHW.

## **Activities in other parts of the Country:**

### **Seattle, Washington**

The “Retire Them Don’t Fire Them” flare collection program is sponsored by the United States Coast Guard, the National Safe Boating Council, Inc, and Orion Safety Products with assistance from the Sea Scout Fleet and the Chief Seattle Council. Orion Safety Products, a flare manufacturer, provides a 10% savings coupons for boaters who bring in expired flares to a collection site.

### **Boat/U.S. Magazine**

Recent letters to editor of Boat US magazine have documented this problem in other States:

#### Volume IV, July 1999

##### **“Flaring Up”**

“Lately I noticed that I have accumulated 20 or more flares which are outdated during my years of boating. I recently contacted both the local and regional U.S. Coast Guard offices to find out the proper way of disposing of the flares. In both cases, I was not given any clear answer on what action to take.

One Coast Guardsman stated that I should keep them on board along with some updated flares as they would probably still function. Another suggested that I soak them in a pail of water until they fell apart, then dump the remains into the ocean. Both of these answers seem to be not a good solution. If anyone out there knows the proper way to dispose of outdated flares, I would like to hear the solution”.

Ross Giammanco  
Gloucester, MA

#### Volume IV, September 1999

##### **“Flare-Ups”**

“In your last issue, a member asked for information on how to dispose of expired flares. The solution at our yacht club was to select a time and place for the firing of expired distress signals and notify the local U.S. Coast Guard Marine Safety Office of our plans. Our objective was not only to get rid of the expired flares and smoke signals, but to provide our members with an opportunity for hands-on experience in firing them, something most boaters rarely, if ever, get to do.

Authority was granted and with a local fire department unit standing by, a group of about 35 members assembled at the end of a pier with expired material in hand and in a relatively organized manner, we shot ‘em off. We called the local Coast Guard station both before we began the exercise and after it was over and also let our state Department of Natural Resources know about it so as to cover all bases.

Tom Galbraith  
Bluffton, SC

## THE ACTION PLAN

The recommendations in this action plan were developed by the VDS Flare environmental problem solving team based on suggestions and input from boaters, flare manufacturers, USCG and emergency responders, and HHW managers.

#	RECOMMENDATION	AGENCY(S)	COST	TARGET DATE	PRIORIT Y
1	Collect Waste Flares at HHW Collection Site	County HHW	<\$1,000	May 2001	High
2	Provide Collection Sites that are Convenient to Boaters	County, Fire Dept, USCG, Marinas	Variable	None	Low
3	Organize Special Flare Collection Events	County, Fire Dept., Industry, Boater Organizations	Variable	Fall/Winter 2000/2001	Medium
4	Thermal Destruction in a mobile thermal destruction burn unit (MTDU)	State Fire Marshall, County Solid Waste, Fire Dept, Sheriff Bomb Squads	\$2,000 to \$17,800	May 2001	High
5	Provide flare collection and disposal information in annual boater registration renewals statewide	FDEP, County Tax Collectors	\$30,000 to \$50,000	June 2001	High
6	Update Boater guides with flare disposal information	FFWCC, Local Agencies	Minimal	When boaters guides are revised	Medium
7	Post signs	Local Agencies, Boater Organization	Variable	None	Low
8	Create an educational flier	USCG	Variable	None	Medium
9	Article for Press Release	FDEP, County HHW	\$200	January 2000	High
10	Include disposal information in packaging	Manufacturers	Variable	May 2001	High
11	Include flare disposal information in boater safety courses	USCG Auxiliary, Power Squadron	Variable	None	High
12	Create a flare disposal display for use at boat shows and sporting events	FDEP	\$500	September 2000	Low
13	Post Information on a Web Page(s)	FDEP, USCG, etc.	Minimal	September 2000	Medium
14	Track emergency incidents caused by mishandling of flares	National Fire Protection Assn.	Minimal	None	Low
15	Track false distress alerts Coast Guard responds to caused by fired flares	USCG	Minimal	None	Low

### Recommendations for Collecting VDS Flares:

1. **Household Hazardous Waste Collection Site:** Every Florida County HHW Program should collect VDS flares from recreational boaters. Even landlocked counties may receive flares from residents that keep their boats in coastal counties. The waste flares must be stored in closed metal or plastic containers segregated from other HHW.
2. **Provide Collection Sites that are Convenient to Boaters:** Waste flares could be collected from recreational boaters at marinas, boat ramps, and other locations they frequent. Flares should be stored in closed containers that are clearly marked, supervised, and monitored for public safety. The operator of the collection site must ensure that the flares are not accidentally or intentionally ignited. Due to liability issues this option should only be considered on a case by case basis. The costs would include providing an approved container and added personnel and insurance costs.
3. **Organize Special Flare Collection Events:** Boat shows and sporting shows that attract large numbers of boaters may be good occasions to invite boaters to bring out of date and damaged flares. Thermal destruction could be arranged with the Florida Fire Marshal or a contractor specializing in

explosive materials. Some flare vendors may be willing to provide coupons for the purchase of new flares in exchange for old flares that are brought in for disposal. The costs for organizing a collection event include advertising, personnel, liability insurance, approved storage container, and final disposal costs. Some of these costs might be lowered or avoided by partnering and using volunteers to help.

#### **Recommendations for Disposal of VDS Flares:**

- 4. Thermal Destruction in a Burn Unit:** Flares may be destroyed by thermal destruction. Approved mobile thermal destruction burn units (MTDU) may be used for flare destruction after obtaining an emergency burn permit from the FDEP hazardous waste program. The State Fire Marshall owns four single chamber MTDUs that are stationed with their bomb squads in Tallahassee, Pensacola, Tampa and Fort Myers. The State Fire Marshall has offered the services of those bomb squads who will bring their MTDU and expertise to the counties that need to dispose of flares. Many local bomb squads already own MTDUs for disposing of other reactive wastes such as ammunition, tear gas and old fire works. Purchasing an MTDU ranges from \$7,400 to \$26,000. Since the MTDUs are mobile, counties could partner to share the MTDU and the cost. To avoid the cost of purchasing an MTDU and training personnel to conduct burns, the local government may opt to use the free services provided by the State Fire Marshall or pay a contractor to perform the service. One private company charges \$2,000 for the first 150 pounds and \$7 for each additional pound of explosive/reactive waste.

#### **Recommendations for Public Education:**

- 5. Provide flare collection and disposal information in annual boater registration renewal:** A flier could be inserted into boater registration renewals mailed by the county tax collectors office. FDEP could develop a generic flier with a blank space for specific flare disposal information for each county. The cost would include the cost of developing and printing the flier and time spent interfacing with the individual county tax collectors and HHW program managers.
- 6. Update Boater guides with flare disposal information:** The Boater Guides for local waterways are funded by the Florida Fish and Wildlife Conservation Commission. These guides are produced with input from local organizations and contain valuable information for boaters. When they run out and are reprinted they could be updated to include the local flare collection information. The Marine Industries Association and other groups also create boaters guides. They could be asked to include this information when they reprint their guides. The cost to update boaters guides would be minimal.
- 7. Post signs:** Educational signs could be posted at public boat ramps, marina docks, at point of sale and other locations frequented by boaters. Many counties have sign shops for creating road signs. Manufacturers could provide generic flare disposal signs for point of sale locations and marinas.
- 8. Create an educational flier:** An educational flier could be handed out at locations frequented by boaters including point of sale, boat and sporting shows, and marinas. The flier could be generic and used statewide, or county specific. The flier could also include disposal information for other types of household hazardous waste generated by boaters such as used batteries, mercury containing bilge pump switches, solvents, used oil, etc. The USCG has two educational fliers for flares, one that is used nationwide and one specifically for Florida. These fliers have not been updated in several years.
- 9. Article for Press Release:** A press release with collection and disposal information could be provided to various media. It would be important to reach smaller periodicals that target boaters, such

as local newsletters put out by boating organizations. FDEP staff could draft an article for press release. The outreach/media specialist in each FDEP District could fax it to local media.

- 10. Place flare disposal information in packaging:** Flare manufacturers could place information on the flares or in the packaging to remind boaters not to toss their out of date flares in the garbage. The notice could include generic information to contact local authorities for proper disposal of household hazardous waste. FDEP could contact flare manufactures to make this request.
- 11. Include flare disposal information in boater safety courses:** Power Squadron and USCG Auxiliary provide boater safety courses and printed material for boaters. FDEP could develop a flare disposal information package for these groups so that they could update their course material. The costs would include FDEP personnel time developing the package and the cost of mailing to boater groups.
- 12. Create a flare disposal display for use at boat shows and sporting events:** An educational display could be used by FDEP at events that draw large numbers of boaters. Fliers and other handouts could be available at the display. The display board would cost about \$220, the display materials would cost about \$50, and the time needed to create the display would be less than 20 hours.
- 13. Post Information on a Web Page(s):** Proper flare disposal information could be placed on web sites frequented by boaters. FDEP could supply the flare disposal information. This would require some FDEP personnel time and the cost of postage.

#### **Other Recommendations:**

- 14. Track emergency incidents caused by mishandling of flares:** Fire fighters track incidents on a national database. This database does not include “flares” as a choice for “cause of incident.” Fire fighters must enter “other” as a choice for “cause of incident.” The database should be modified so those incidents caused by mishandling of flares are tracked.
- 15. Track false distress alerts Coast Guard responds to caused by fired flares:** The data base the USCG uses to track false distress alerts does not allow an entry to describe the cause. It is difficult to know how many false alerts are caused by flares that are fired without cause. This data base could be updated to include choices for cause of false alert such as VSD Flare, EPIRB, Radio Contact, etc.

## IMPLEMENTING THE PLAN

Cheryl McKee, the team leader from the Southeast District of FDEP, will ask for assistance from the other five Districts and Tallahassee to implement this Action Plan. All counties should have some mechanism for collecting and destroying out of date and damaged flares by May 2001. Some forms of boater education should be in place by May 2001. FDEP will try to encourage other agencies and manufacturers to help in the effort to educate boaters and collect and properly dispose of waste flares generated by boaters.

### PROPOSED ACTION PLAN IMPLEMENTATION

December 2000	Mr. Bob Madden of PBC SWA is taking early action by organizing a Palm Beach County flare disposal task force. Mr. Madden met with bomb squads and police and fire departments to measure annual generation of flare, ammunition and tear gas waste. He conducted a survey and found that Palm Beach County did not generate significant amounts of reactive waste. Mr. Madden can host the burns at his HHW facility, but he does not want to operate the burn unit. Mr. Madden wants one of the bomb squads to conduct burns. Mr. Madden has contracted with REMTC to come and burn the flares he has collected up to Spring 2000.
Spring 2000	Ms. McKee will work with SED counties to ensure flare collection and disposal options exist.
May 3-4, 2000	Ms. McKee will present action plan to annual meeting of HHW managers.

## MEASURING SUCCESS

To ensure that this Action Plan adequately addresses the problem of disposing of flares generated by boaters, progress must be measured. The survey that was conducted to measure how many boaters had access to a safe means of flare disposal will be conducted annually to see if the situation has improved. HHW managers could be asked to track how many flares are being collected and disposed of at their sites. Additional collection sites convenient to boaters could be quantified. Special flare collection events will be tracked. To measure the success of the boater education campaign, the boater survey will be repeated annually to see if boater behavior is changing. Boater education initiatives will be tracked.





Appendix I.  
**VENDORS**

**Burn Units:**

1. Reactive and Explosive Materials Training Corporation (REMTC) manufactures and sells single and two chamber thermal destruction units with a continuous feed tube. REMTC services include safety training and on-site burns conducted with their mobile equipment by their own personnel. They can bring their equipment and trained personnel to a flare collection site to conduct a controlled burn. For more information call (800) REMTC95 or visit their web page [www.remtc.com](http://www.remtc.com).
2. HURDS manufactures and sells a single chamber ammunition and fireworks disposal trailer that can be fitted with a special grate for flare destruction. For more information call (541) 995-6317.

**\*DOT Approved Storage Containers for Explosives:**

1. Alpha Explosives manufactures armored storage magazines and bins. They are able to make customized bins to meet the needs of their clients. For more information call 916/645-3377.
2. ARMAG Corporation manufactures armored storage magazines and bins. For more information fax them at 502/348-4801, or e-mail [info@armagcorp.com](mailto:info@armagcorp.com), or visit their website [www.armagcorp.com](http://www.armagcorp.com).
3. REMTC recovers used armored storage magazines from sites going out of business. These used storage bins are DOT approved. For more information call 1-800-REMTC95.
4. Tread Corporation manufactures permanent and portable explosive storage magazines. For more information call 540/982-6881.

\* Note: It is not necessary to purchase an armored storage container to store waste flares. DOT regulations only require stainless steel, or aluminum, or plastic, or even fiberboard containers for shipping the visual distress signal flares used by boaters. These armored storage containers are for explosives that are much more explosive and dangerous than flares.

Appendix II.  
**FUNDING SOURCES**

**1. FDEP Unique Activities or Innovative Projects for Hazardous Waste Management Grant**

FDEP can provide up to \$50,000 per project for innovative projects to manage hazardous waste. These grants are only available to local governments that have an established, permanent household hazardous waste program. This funding could be used to create educational materials for proper waste flare management, determining distribution of educational materials, determining a collection strategy for waste flares, and establishing a proper method of disposal including purchasing equipment. The grantee must provide a 100% match, which could include administrative cost and in-kind service. For more information call Ms. Jan Kleman at (813) 744-6100 ext. 320 or suncom 512-1042 ext. 320.

**2. Boat U.S. Foundation For Boating Safety Grassroots Grants**

Boat U.S. offers these grants to not for profit groups and volunteer boating groups, associations and clubs. During the 1999 Grassroots Grant period Boat U.S. had \$45,000 available for community based boating safety and education projects. Organizations may propose multiple projects, each individual project for up to \$5,000. For more information call Vanessa Pert, 703/461-2878.

**3. Boat U.S. Clean Water Trust Clean Water Grants Program**

Boat U.S. awards grants of up to \$2,000 to not for profit, volunteer based organizations to support education and hands-on efforts aimed at cleaning up local waterways. Emphasis is placed on funding projects that reach boaters and anglers with positive messages about preventing pollution before it starts. For more information call Jenny Pereira at 703/461-2878, extension 3824.

**4. National Safe Boating Council**

The West Marine Boating Safety Youth Program Award recognizes individuals and organizations that have developed and successfully implemented youth boating education programs targeting safety issues and concerns of national interest. A single cash grant is awarded annually to be used to implement or enhance an existing safety program. For more information go to [www.safeboatingcouncil.org/bwa.htm](http://www.safeboatingcouncil.org/bwa.htm).



Appendix III.  
**Flare Manufacturers**

Alliant Techsystem, Inc  
Kilgore Operations  
Kilgore Drive  
Toone, TN 38381

Bristol Flare Corporation  
2975 State Road  
P.O. Box 540  
Bristol, PA 19007  
Tel. 215/788-3001

Comet GmbH  
Postfach 10-02-67  
27502 Bremerhaven  
Germany

Heckler & Koch, Inc.  
14601 Lee Road  
Chantilly, VA 22021

Orion Safety Products  
28 Sloan Street  
Roswell, GA 30075  
Tel. 707/650-8991

Norabel Hanson  
Box 93  
S-427 00 Billdal  
Sweden

Pains-Wessex Ltd.  
High Post  
Salisbury, Wiltshire, SP4 6AS  
United Kingdom

Pyrotechnics Industries, Inc.  
600 Center Ave.  
Grand Junction, CO 81501

Skyblazer, Inc.  
1700 Via Burton  
Anaheim, CA 92806

Sodibar Systems  
1222 1<sup>st</sup> Street NE  
Washington, DC 20002

U.S. Marine Safety Assn.  
Fernley & Fernley  
1900 Arch Street  
Philadelphia, PA 19103

Appendix IV.  
Survey Results from LEPC, USCG, HHW, and boater organizations

HHW managers, LEPC Members, Coast Guard, etc. ideas to expedite the safe collection/disposal of flares	9 responses from HHW Managers	12 responses from LEPC Members	3 responses from Coast Guard Aux. Yacht Club Assn	Totals
Have collection sites at marinas, ramps & docks, and where boaters buy fuel	4	6	1	11
Exchange for new ones at point of sale	5	7	2	14
Have Fire Dept. Collect them	3	2		5
Collection by the coast guard	4	4		8
Collection at HHW site	6	6	2	14
Provide a pick up service			1	1
*Other		1	3	4
Advertise disposal opportunity	6	8	1	15
Use for demonstrating proper use	2	2	2	6
Put a sign at the boat ramp	4	7	1	12
Send out flier with boat registration	6	12	1	19
Have a number people can call	3	2	1	6
Other		2	1	3
Object to using old flares for demonstration		1		1
Agree that a 2 chamber burner best destruction method	4 (2 said no)	2		6

Over 200 surveys were mailed to LEPC, HHW program managers, Coast Guard, and flare manufacturers, so far 23 people have responded.

\* Other methods of collection and advertising recommended by HHW Managers include:

- Why can't flares be destroyed by open burning? 40CFR 265.382 speaks of open burning for waste explosives or propellants. HHW is exempt, so open burning would be the most cost-effective approach. Burn less than 100 lbs., maintain minimum distances for fire safety. *Note: 40 CFR 265 applies only to RCRA facilities that are being closed. Open burning is allowed for explosive materials at old hazardous waste sites where there is no safe way to transport the waste to a permitted treatment facility.*
- HHW programs can't afford disposal. Use boater registration fees to fund a collection and destruction program.
- Agencies should work together to educate boaters, collect and dispose of flares, present this issue to the FL P2 Roundtable.
- Object to collection at HHW sites, the waste disposal contractor will not accept waste flares for transport.
- Use for 4<sup>th</sup> of July fire works over the water.
- HHW site is not designed to store explosives, forward HHW flares to Fire Dept, but some will not accept. Counties need to plan for this.
- Put flare information on a web site.

\* Other methods of collection and advertising recommended by LEPC Members include:

- Allow Boaters to shoot off on 4<sup>th</sup> of July. (NOTE: discharging flares on the fourth of July would be considered an illegal "false alert" by the USCG. Any boater that creates a false alert is liable for applicable penalties under the law and the cost accrued by the USCG responding to the false alert.)

- Advertise on TV and Radio.
- Find new ways to render flares harmless.
- Soak flares before turning in to be burned.
- Manufacturers should find way to extend life of flares, use safer compounds, and provide disposal info on packaging.
- Coast Guard should reduce requirement due to better navigational aids like GPS.
- Charge customer a disposal fee and let HHW take full responsibility for disposal.
- Offer waste flares to sugar cane mills and hospitals for incineration, why waste a potential energy source.
- Recycling
- Security is a concern for waste flares collected at boat ramps.
- Flare demonstration staff need to be properly trained and location and safety are a concern.
- Fire chamber should have a double gas burner.
- Advertise safe flare disposal at boat shows and boat dealerships, do a public service announcement.
- Flare demonstration a great idea, I am a boater and have never fired one.
- Have manufacturers make safer flares.
- Research ways to extend the life of the flares.
- The inability to extinguish a flare could make a flare demonstration unsafe.
- Fire safety and air contamination might be concerns at a flare demonstration.

\* Other methods of collection and advertising recommended by USCG and Yacht Club Association include:

- Keeping on board up to four years beyond expiration date just to have extras for emergency.
- Coast Guard Auxiliary and Power Squadron Safe Boating courses could include flare disposal information.
- Manufacturers could provide proper disposal information on flares or packaging.
- Florida boating education materials could include proper flare disposal information.
- Fire Dept. and Coast Guard have more important things to do than to collect flares.
- USCG, Coast Guard Auxiliary, FMP and law enforcement should cooperate to provide flare demonstrations.

