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In Situ Burning of Oil Spills Workshop Proceedings

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William D. Walton and Nora H. Jason, Editors

Building and Fire Research Laboratory
National Institute of Standards and Technology
Gaithersburg, MD 20899-8644

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COVER

U.S. Coast Guard and Minerals Management Service sponsored fire-resistant oil spill containment boom performance test using a non-commercial test boom at the Coast Guard Fire and Safety Test Detachment, Mobile, AL, August 1997. William D. Walton, Photographer.

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REPORT OF THE ENVIRONMENTAL AND HUMAN HEALTH PANEL
Jean Snider, Ph.D., National Oceanic and Atmospheric Administration
Panel Chair

BACKGROUND

The Environmental and Health Panel believed that much progress had been made since the 1994 *In Situ* Burn Workshop. Several research areas that had been identified at that time have been addressed and require no further work. Uncertainties regarding the toxicity and behavior of the burn residue have been addressed sufficiently to provide evidence that this is not a likely environmental concern. Research has been conducted to explore different techniques for reducing the amount of soot emitted during small scale burns. Although these studies offered promise, scaling them up to a full-scale spill response present an intractable logistical problem. As a consequence, no further efforts on these techniques have been proposed. In other areas, such as smoke plume trajectory modeling, significant progress has been made and that completion of ongoing projects and routine refinements is all that is required.

In other areas, the major work to be done is non-research in nature. Significant effort has been devoted to developing and testing operational procedures for particulate monitoring. Guidelines have been developed for assisting decision makers in defining appropriate conditions for implementing *in situ* burning. Although these tools are available, it is critical that training be conducted frequently on their proper use.

The group believed that lack of adequate knowledge by public and other decision makers was a major impediment to acceptability and utilization of *in situ* burning. Information needs to be presented in such a way to allow people to understand the role of *in situ* burning and the takeoffs facing decision makers in responding to an oil spill. Several efforts at the regional level have been made to encourage the use of *in situ* burning. Both Alaska Clean Seas and the Regional Response Team (RRT) in Region I (New England) have developed educational materials specifically for the response community to use in explaining the role of *in situ* burning. In Louisiana and Alaska efforts have been made to develop systematic procedures to collect data associated with inland burns on actual spills. Both education and better documentation of inland/upland spills were identified as high priority activities: these regional efforts should be built upon to develop a more comprehensive and consistent national approach.

ENVIRONMENTAL AND HUMAN HEALTH PANEL RECOMMENDATIONS

Particulates

Need: Refine the particulate monitoring strategy.

Research: Develop training curricula for monitoring personnel.

Method of implementation: Conduct training and updates at periodic intervals.

Priority: High

Comments: It is critical that decision makers [e.g., on-scene coordinators (OSCs) scientific support coordinators (SSCs)] fully understand the applicability and limitations of the monitoring results. Skills should be exercised through interregional drills, burns of opportunity and refresher training.

Research: Revisit the National Response Team (NRT) particulate guidelines to evaluate the applicability to Regional Response Teams (RRT) and on-scene coordinators (OSC) needs.

Method of implementation: Reconvene panel of experts, including health and spill responders, to assess implementation of National Response Team (NRT) guidelines and identify additional needs.

Priority: High

Comments: Need to change focus of some responders from the apparent application of the document as a standard to the use as guidance or an action level. There needs to be more emphasis on risk assessment during the *in situ* burn decision making process and communicating the decision to the public. An expert panel needs to evaluate these issues and develop recommendations.

Research: Complete studies to characterize performance of instruments used to measure particulates under varying environmental conditions.

Method of implementation: Controlled experiments to examine influence of various factors, such as particulate sources, temperatures, and humidity. Develop appropriate changes in protocols to enhance instrument accuracy.

Priority: High

Comments: Studies are underway at the National Institute of Standards and Technology (NIST) on instrument performance. These studies should be completed and appropriate adjustments made in the field measurement protocols.

Inland/Upland

Need: Develop a better understanding of *in situ* burning takeoffs, pros and cons for different habitats.

Research: Develop guidelines for proper application of *in situ* burning for different environments.

Method of implementation: Develop a protocol to collect data on actual spills. This must include not only conditions during burning, but also during long term recovery. Need to revisit and amend existing documentation methods to develop guidelines for different environments (e.g., tundra, marsh, shoreline, swamp, lakes).

Priority: High

Comments: Guidelines and documentation are needed on *in situ* burning for marshes, rivers, lakes, tundra, shoreline, and upland (on land). Alaska and Louisiana have begun to develop protocols for documenting *in situ* burns in these environments. These efforts should be shared and adapted for specific environments of concern.

Smoke Plume Trajectory Modeling

Need: Improve smoke plume trajectory modeling capabilities to support *in situ* burn planning.

Research: Continue to improve existing models.

Method of implementation: Continue to validate models with real data. Continue to refine with improvements in software. Continue to refine complex terrain capabilities.

Priority: Medium

Comments: Some states indicate it is important to have an Environmental Protection Agency (EPA) validated model. This should be continued to be pursued. It is critical that the modelers receive feedback from user community and the user community be aware of model capabilities and limitations. It is critical that users are adequately trained and such training be frequently reinforced through refresher courses, software updates, etc.

Burn Residue

Need: Not applicable.

Research: No new research was considered necessary either for toxicity or sinking.

Method of implementation:

Priority:

Comments: Regional Response Teams (RRTs) and on-scene coordinators (OSCs) should be strongly encouraged to recover burn residue where feasible, especially in sensitive environments.

Reduction of Soot Emissions

Need: Not applicable

Research: No new research was proposed.

Method of implementation:

Priority:

Comments: Since the 1994 Workshop, research has been conducted with ferrocene and air injection to reduce soot emissions; however, there are major difficulties in the application for operational use. Conceptually it is a good idea and new ideas to reduce soot emissions should be pursued; however, none appear viable for large scale use at the present time.

Non-particulate Emissions

Need: Follow research in non-particulate emissions from *in situ* burning

Research: Follow up on developments and new information on non-particulate emissions from *in situ* burning, including volatile organic compounds (VOCs), polycyclic aromatic compounds (PAHs), and others.

Method of implementation: Review literature.

Priority:

Comments: As research is published on non-particulate emissions from *in situ* burning the response community should consider this work as it applies to *in situ* burning safety plans and monitoring protocols.