2006 DOE Hydrogen Program H2 Incident Reporting and Best Practices Database

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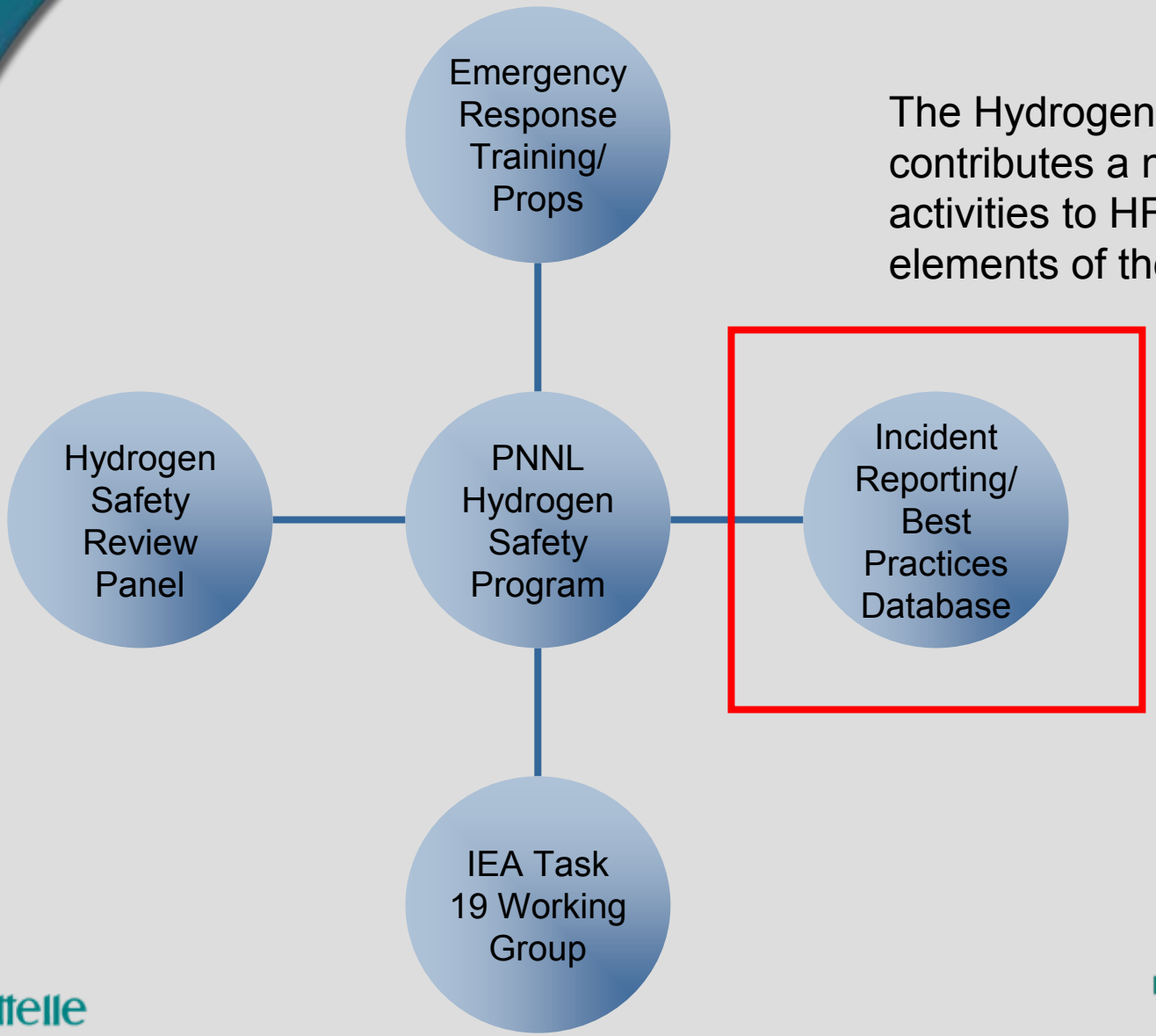
PNNL Hydrogen Safety Program



The Hydrogen Safety Program contributes a number of important activities to HFCIT. The current main elements of the program are shown here.

Overview

Timeline

- Project start 10/05
- Initial release of IR database: 5/06
- Best Practices draft: 12/06
- Percent complete: 50%
- Note that addition of incident reports and new best practices are ongoing

Budget

- Total project funding
  - $120K in FY06
  - Many external sources utilized for incidents and Best Practices
- Funding received in FY05: $0K

Barriers

- A. Limited Historical Database.
- B. Proprietary Data.

  Only a small number of hydrogen technologies, systems and components are in operation. Only limited data is publicly available on the operational and safety aspects of these technologies. Sharing safety data is important for hydrogen projects funded under the Program as well as all others.

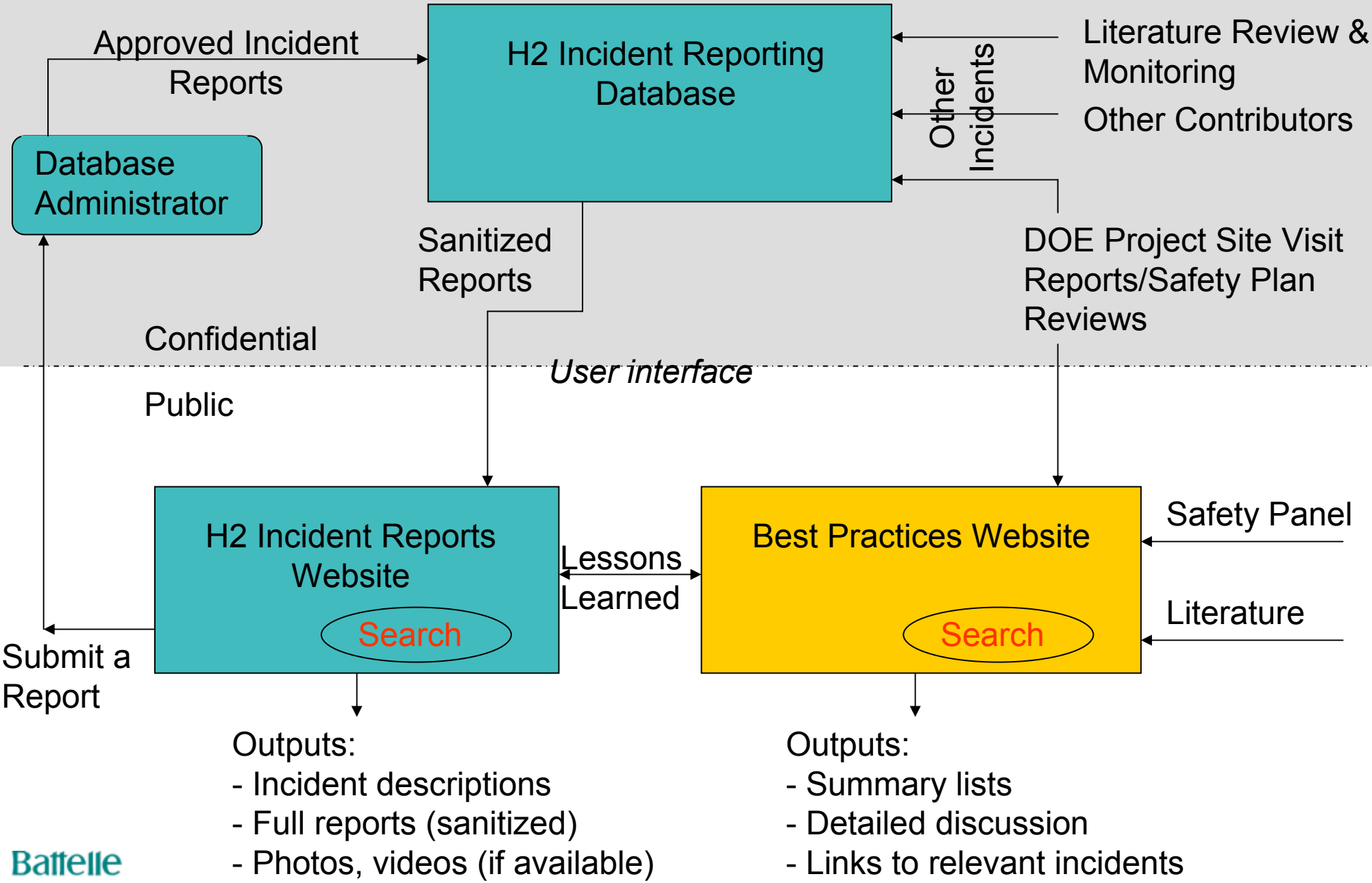
Partners/Contributors

- Hydrogen Safety Review Panel and potentially all HFCIT projects
- Any external organization willing to share incident reports

Objectives

1) Establish a web-based system for open sharing of lessons learned from hydrogen incidents and near misses, and provide a confidential tool for reporting any occurrence of same.
2) Provide a Hydrogen Safety Best Practices document to enable widespread benefit from the wealth of knowledge and experience already attained in industry, aerospace and elsewhere.

H2 Incident Reporting and Best Practices Database



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Approach

H2 Incident Reporting (IR) Database

1. Review literature, restricted access databases, and other sources for gathering information on past incidents and to identify other ongoing collection efforts.
2. Examine other (i.e., non-hydrogen) safety incident databases for data collection formats, output methods, etc.
3. Construct a user-friendly, intuitive interface.
4. Input and sanitize all approved records.
5. Publicly launch website.
6. Continue to monitor the literature, other databases, and submissions to this database for new incident reports/lessons learned.

Hydrogen Safety Best Practices (BP) Website

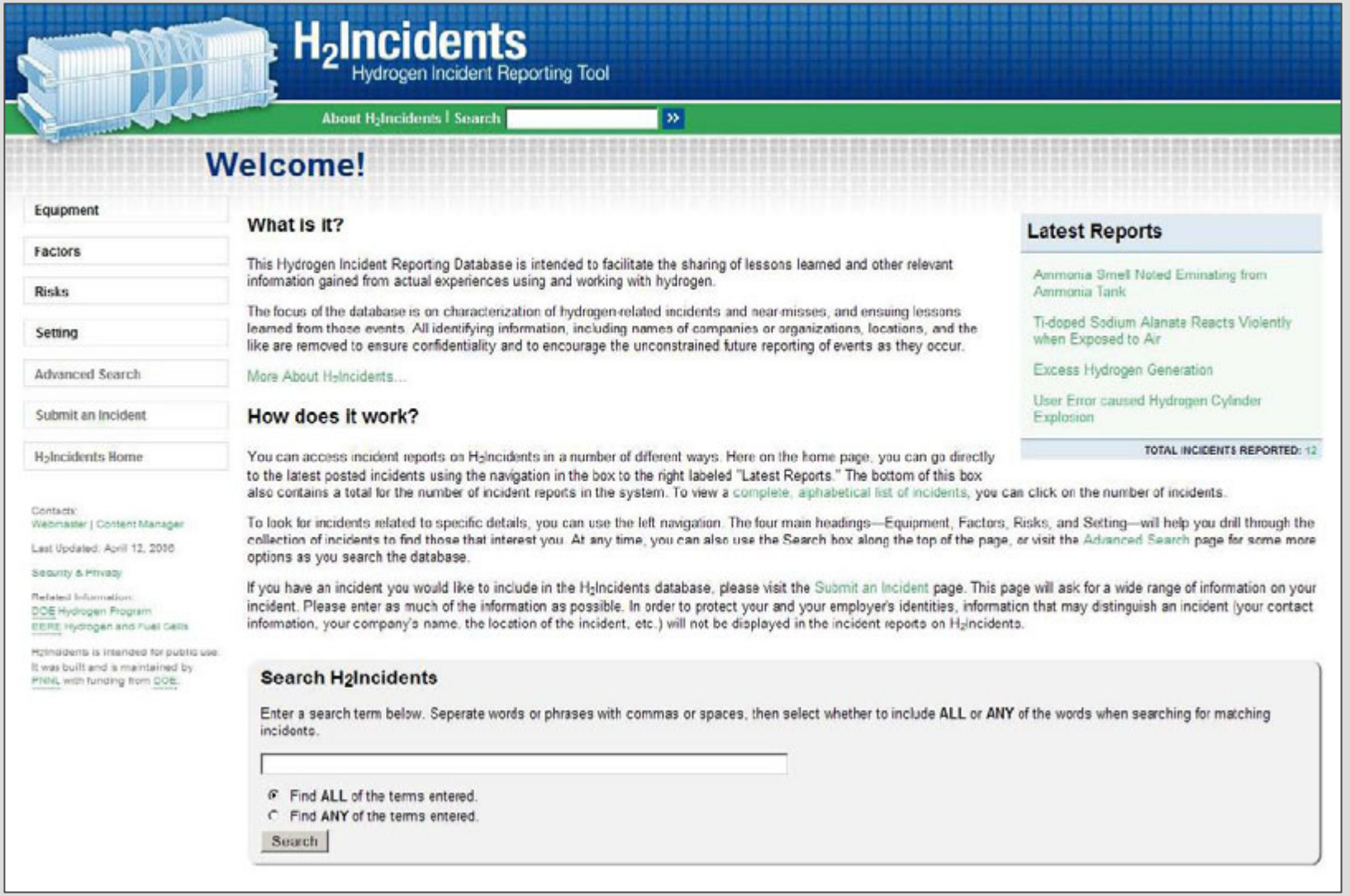
1. Review plans for document with Hydrogen Safety Review Panel.
2. Compile BP from HFCIT project safety site reviews and submitted safety plans.
3. Obtain additional BP from Safety Panel and from the extensive literature.
4. Link BP with IR websites.

incidents ⟹ lessons learned ⟹ best practices

Technical Accomplishments/ Progress/Results

- Initial IR Database is up and running at h2incidents.pnl.gov
- Currently there are 130-140 records in the database, derived from a variety of sources. Note that the vast majority at present are historical incidents, reaching back as far as the 1960s.
- Have identified a number of additional sources of potential incident information.
- Best Practices information collection and website has begun and is expected for first public appearance around the December 2006 timeframe. HFCIT milestone for this document established for FY2008.

Working Draft IR Database

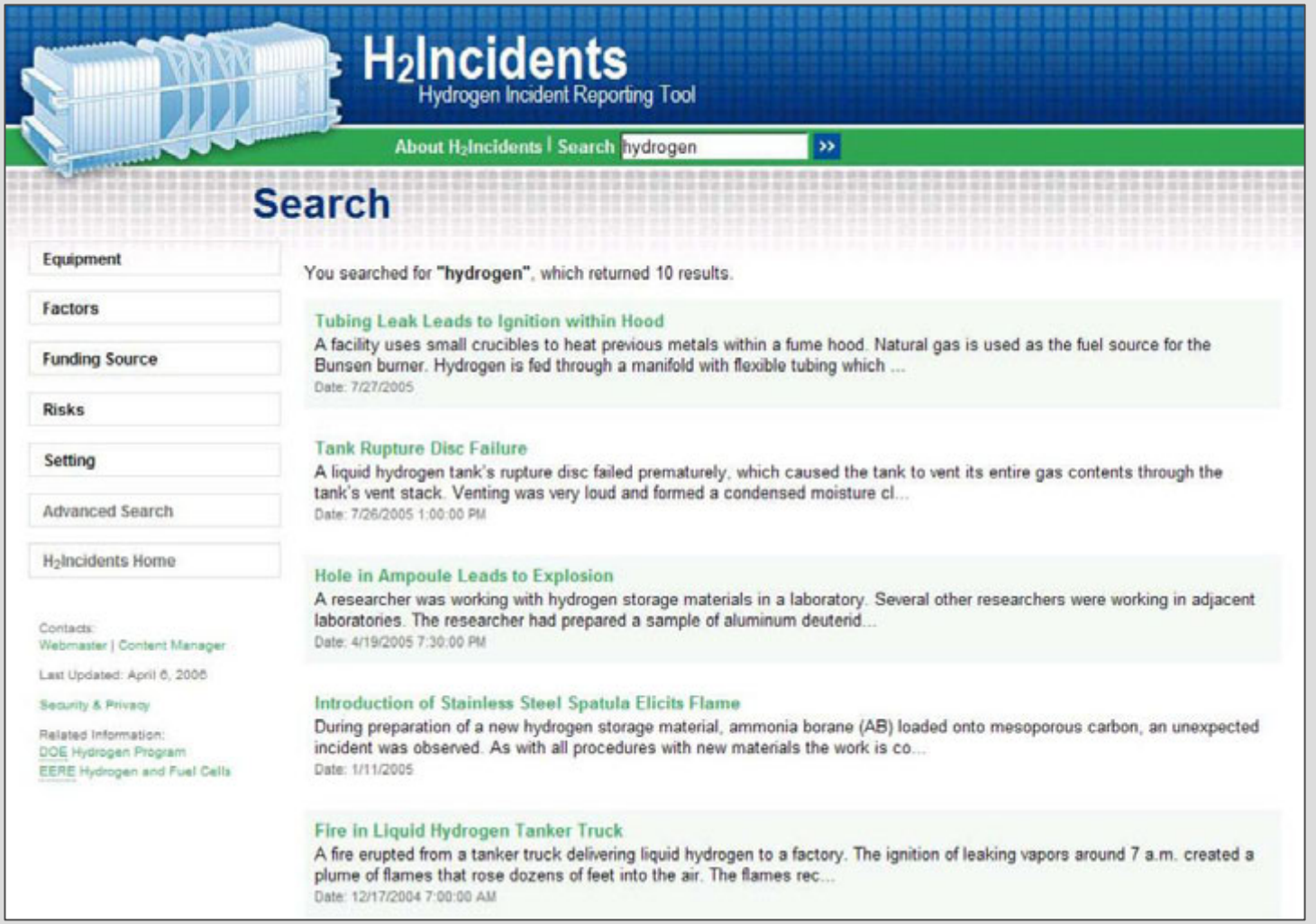


Working Draft IR Database

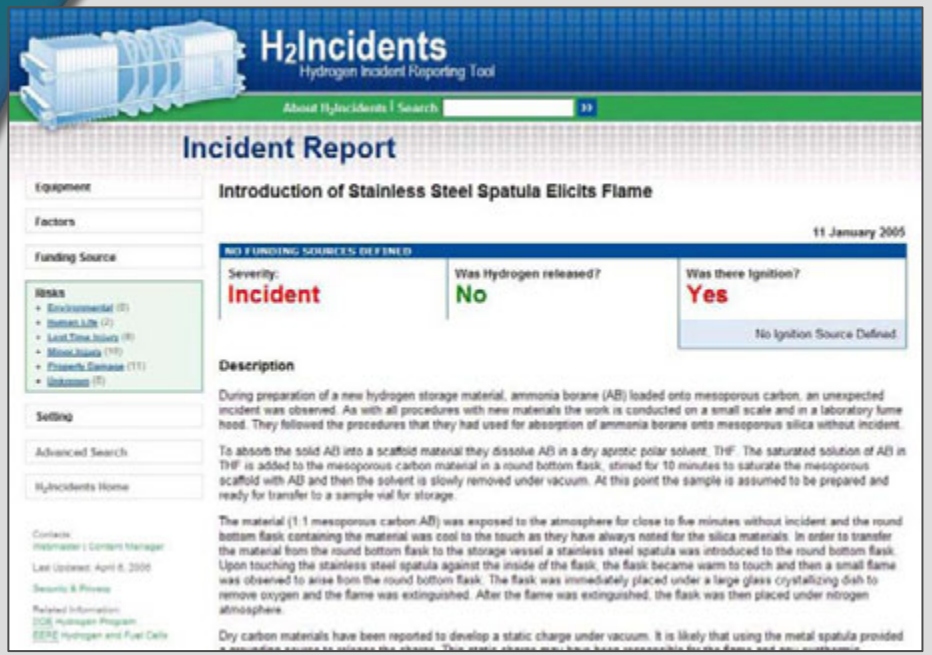
Intuitive, simple interface allows user to drill down to the individual incident level through either characteristics of the incident, such as the equipment involved…

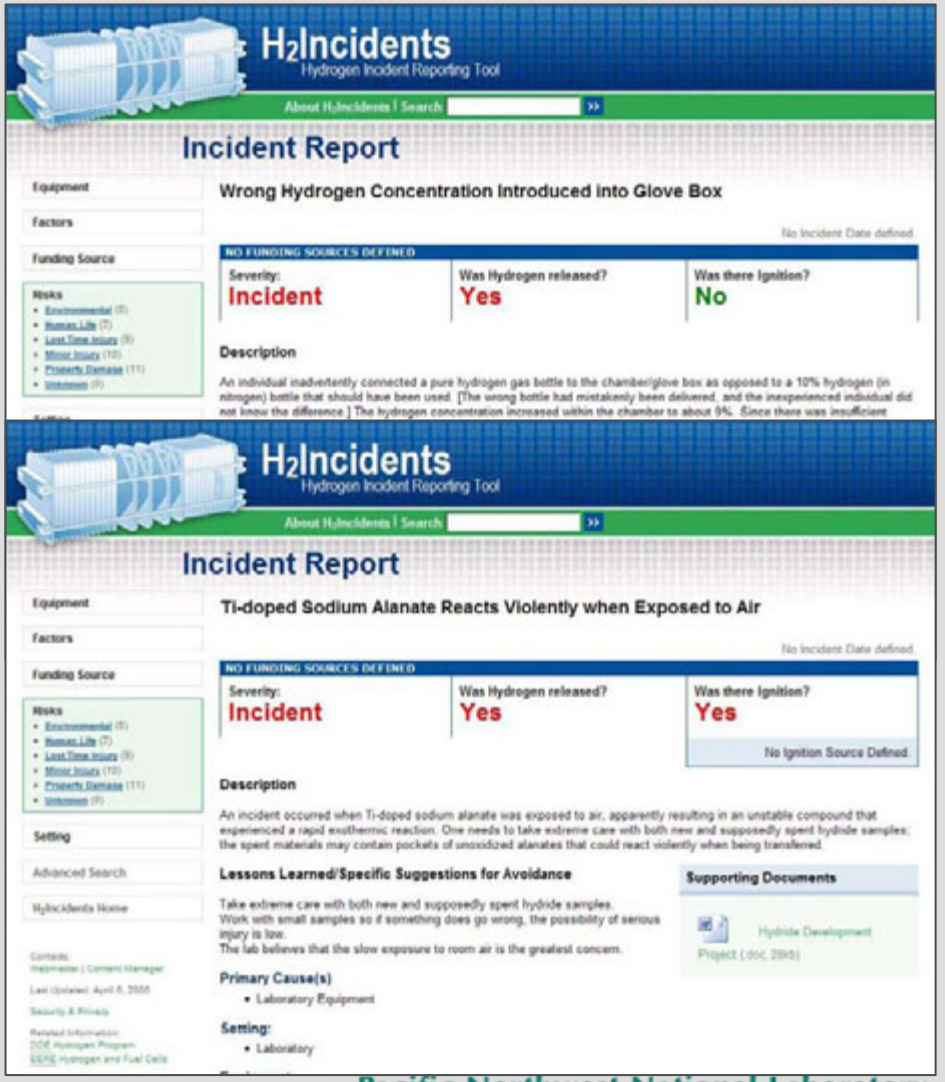
Working Draft IR Database

Or through use of simple and advanced search capabilities.



Working Draft IR Database

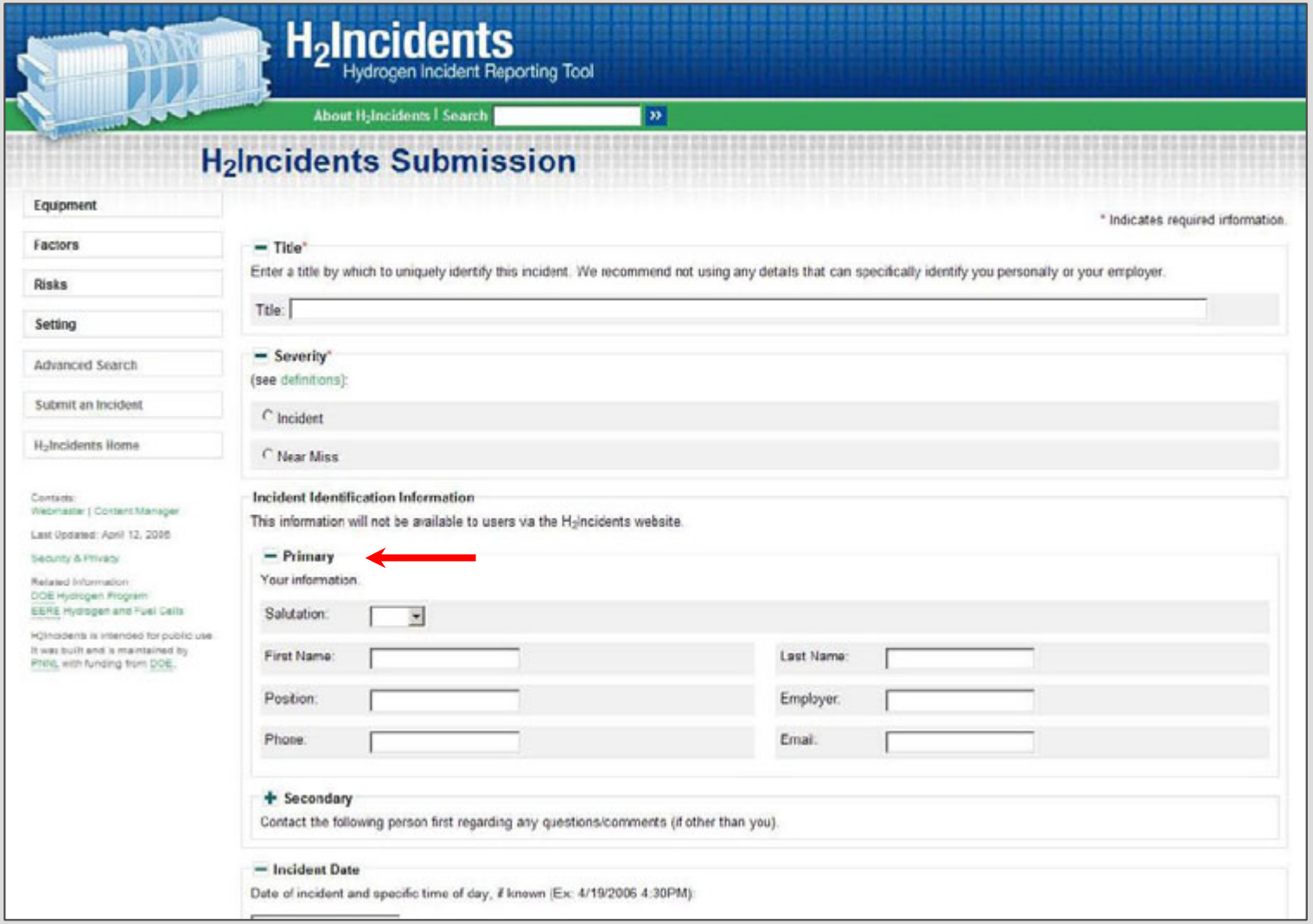




Reports contain summaries and at-a-glance information, and links to related information such as full reports, photos or videos, etc.

Working Draft IR Database

Submitting an incident report can be done via an online form, or by emailing attachments to the database administrator.



Future Work

- Continue pursuing historic incident reports through other databases and the literature, and through the knowledge of other researchers and organizations.
- Follow up and input new incident reports when they are submitted or otherwise identified.
- Continue adding functionality to the database, including features both already planned and other useful ideas suggested via feedback on the site.
- Begin developing the Hydrogen Safety Best Practices website and establish relevant links between the two.

Summary

- An excellent safety record will aid commercialization and public acceptance.
- Sharing of incident related information, including circumstances surrounding the incident and any lessons learned, is one of the surest ways to help prevent recurrence of similar events.
- The goal of this database and website is to enable all the benefits of sharing safety-related information, while eliminating any negative impacts from sharing it.
- It is hoped that visitors to the site will come both to share information and to learn from the information already there.

Back-up Slides

Responses to Previous Year Reviewers' Comments

- This is a new project, not reviewed last year.

Publications and Presentations

The H2 Incident Reporting Database is located at h2incidents.pnl.gov

Critical Assumptions and Issues

- Success requires that people use the system and not fear negative consequences from reporting.
  - We hope that inclusion of historical incident reports will sufficiently demonstrate the value of the system while assuring that any identifying information remains confidential.