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# CAMEO Stakeholders Report

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# PROPOSED CAMEO MODIFICATIONS IN RESPONSE TO EO 13650 AND STAKEHOLDER INPUT



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## Proposed CAMEO Modifications in Response to EO 13650 and Stakeholder Input

### Introduction

Computer-Aided Management of Emergency Operations (CAMEO) is a suite of software applications (Figure 1) used to plan for and respond to chemical emergencies. CAMEO was first released in 1986, and was jointly developed by the U.S. Environmental Protection Agency (US EPA) and the National Oceanic and Atmospheric Administration (NOAA) to assist front-line chemical emergency planners and responders. It has since undergone numerous modification and upgrades, and is a critical tool used today for chemical spills, other hazards, and emergency management. The CAMEO suite is downloaded over 300,000 times a year by firefighters, police departments, industry, schools, environmental organizations, State Emergency Response Commissions (SERCs), Tribal Emergency Response Commissions (TERCs), and Local Emergency Planning Committees (LEPCs). CAMEO can access, store, and evaluate information critical for developing emergency plans. The CAMEO system integrates a chemical database and a method to manage the data, an air dispersion model, and a mapping capability. All modules work interactively to share and display critical information in a timely fashion. To download the CAMEO programs, learn more, or see examples of innovative uses of CAMEO go to <http://www2.epa.gov/cameo>.

The CAMEO Suite

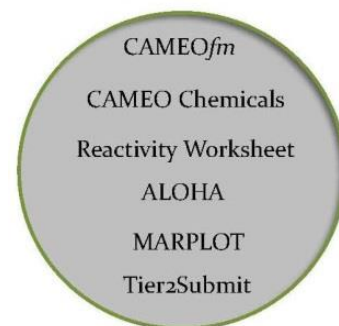


Figure 1.

### The Executive Order (EO)

As a result of fatal chemical accidents in recent years, Executive Order (EO) 13650 (Improving Chemical Facility Safety and Security) was signed on August 1, 2013 calling for:

- Improving Operational Coordination with State, Local and Tribal partners
- Enhancing Federal Coordination
- Enhancing Information Collection and Sharing
- Modernizing Regulations, Guidance, Policy and Standards
- Identifying Best Practices

More information on the EO is available at:

[www.epa.gov/emergencies/eo\\_improving\\_chem\\_fac.htm#eopu](http://www.epa.gov/emergencies/eo_improving_chem_fac.htm#eopu).

A Workgroup established by the EO issued a final Report to the President on June 6, 2014, identifying key areas of action:

- Strengthening Community Planning and Preparedness
- Enhancing Federal Coordination at the National and Regional Level
- Improving Data Management and Sharing with Stakeholders
- Modernizing Policies and Regulations Including EPA's Risk Management Plan (RMP) Regulations
- Incorporating Stakeholder Feedback and Developing Best Practices

The CAMEO team, consisting of US EPA's Office of Emergency Management (OEM) and NOAA's Office of Response and Restoration (ORR), has been working to address the EO requirements and the areas of

action in a manner that will best meet the needs of CAMEO users and stakeholders. The Coastal Response Research Center (CRRC) (<http://crcc.unh.edu/>) is assisting NOAA and the EPA with this effort.

## Development Considerations and Stakeholder Input

The CAMEO team sought input from a variety of stakeholders in order to address the EO in a way that best meets CAMEO users' needs. Modifications to the CAMEO Suite will need to be prioritized due to limited resources, and stakeholder feedback was important to help inform this prioritization. There were two main venues during which the CAMEO team discussed the EO and potential CAMEO modifications with stakeholders: (1) A 2-day CAMEO Stakeholders Workshop in April 2015 at NOAA's Gulf of Mexico Disaster Response Center in Mobile, AL and (2) The National Association of SARA Title III Program Officials (NASTTPO) Annual Meeting in Portland, ME in May 2015. The workshop in Mobile was held specifically to discuss CAMEO modifications. At the NASTTPO meeting, there were several CAMEO events, including: CAMEO training (including a segment with the EO team for Q&A and feedback), a plenary session presentation, and a drop-in discussion time. The purpose of all of the meetings was to gain CAMEO stakeholder input in order to help identify and prioritize modifications to the CAMEO suite to best meet the goals of the EO on chemical safety. The goal was to gain feedback on the present use of the CAMEO suite by federal, state and local attendees and to inform the CAMEO team of recommendations for future enhancements.

The four major topics were:

- **Tier II Data Standard** – The EO proposes that there be a data standard so that information can be shared between systems, in an effort to improve the exchange of Tier II information (e.g., between neighboring states using different Tier II filing systems).
- **Web Accessible Suite** – Currently CAMEO Chemicals is the only program in the suite that is available online. The team is considering whether additional programs in the CAMEO suite should also be web accessible.
- **Training and Outreach** – The EO calls for enhanced CAMEO Suite training and outreach.
- **Mobile Apps** – The CAMEO team gathered feedback regarding whether mobile apps would be useful, and if so, which programs. Related technical considerations were also discussed.

Below is a summary of the stakeholder input that has been received to date. Additional detail on the feedback received, as well as the workshop agenda, participants, presentations, notes, and detailed versions of the above discussion topics can be found at [crcc.unh.edu/workshops](http://crcc.unh.edu/workshops). More information regarding these topics can also be found in Appendices A, B, and C of this report.

### Tier II Data Standard

There was general consensus that a transparent, documented Tier II data standard would be useful, and that the existing Tier2 Submit submission file format can serve as a basis for the national data standard for sharing Tier II information. Technical feedback on file types or data fields was limited, but stakeholders noted that the data standard needs to work well with existing proprietary and state programs. It was emphasized that continuing to have an open discussion with states and other Tier II program developers is key, as is providing them with early details about upcoming changes to the data standard.

## Web Accessible Suite

A number of stakeholders would like a Tier2 Submit website (with a necessary transition period) that is hosted at the national level. However, it is not possible for EPA to host such a website due to restrictions originally put forth by Congress that puts the Tier 2 chemical information into the hands of the state and locals-- not the federal government. Given that, the alternative would be to develop a server-deployed Tier2 Submit website that would be hosted and managed by states (or other organizations), and this development process is much more technologically difficult. There was significantly greater hesitation among stakeholders about this option, due to the requirements for funding, staffing, security, and technical expertise that would need to be provided by the states. Many people expressed concern that the IT hurdles would be insurmountable. CAMEO or MARPLOT websites would be even more complicated. There was some interest in an ALOHA website, which could be hosted by NOAA on a federal server (like CAMEO Chemicals is) because the program does not store user data like CAMEOfm and Tier2 Submit.

After talking with, and getting feedback from, a wide variety of state and local stakeholders, it became apparent that there was, in general, a positive view of existing EPCRA data options. Existing options consist of the CAMEO Tier2 Submit and CAMEOfm applications, state developed electronic collection systems and third party software. With the challenges discussed above, and the majority of targeted stakeholders satisfied with the status quo, the CAMEO team has decided not to develop the web accessible Tier2 Submit and CAMEOfm at the present time.

## Training and Outreach

There appears to be a significant need for enhanced outreach and training related to the CAMEO suite, although this varies tremendously by state/region. Currently, much of the existing training and outreach in the more active states/regions relies on key individuals in those areas, and this activity may decrease as these key people retire. There was interest in having a national or several regional representatives focused on training and outreach, but funding is not available for these positions. There is interest in having an updated CAMEO Companion (a written help resource for the CAMEO suite products) or other role-based training materials. People were especially interested in distance-learning training that could be completed in small increments at whatever time is convenient to their schedule. The training topics that people were interested in were more focused on introductory (awareness level) and some common tasks (operational level) rather than technician-level training. People were very interested in video-based training, although some related technological hurdles were noted.

## Mobile Apps

There was some interest in mobile app development for CAMEO products, although it was not overwhelming. This may have been due to the fact that the participants at the stakeholder meetings were predominately emergency planners, and it seems like mobile apps would be used more by emergency responders. CAMEO Chemicals is the most requested mobile app, and many people responded favorably to the idea of a CAMEO Chemicals app. People were interested in the idea of an EPCRA Data Viewer app, but there was a lot of variation in how people envisioned it (read only, interactive, live syncing, etc.). This product would need to be more clearly defined. There is interest in including mapping capability in a mobile app, and possibly including U.S. Department of Transportation (DOT) Emergency Response Guidebook (ERG) isolation and protective action distances. It was noted

that apps should be platform neutral (Android or iOS) and preferably be able to run without an internet connection (since this may not be available in an emergency).

## **CAMEO Suite Next Steps in Response to EO 13650**

### Already Implemented

- Release CAMEO Chemicals 2.4.2, where the chemical datasheets will now include DHS Chemical Facility Anti-Terrorism Standards (CFATS) regulatory information in addition to information from the Emergency Planning and Community Right-to-Know Act (EPCRA), the Clean Air Act, and other EPA regulations. Additionally, several new chemical datasheets will be added to the database to have better coverage of all 333 chemicals in the CFATS list.
- Release ALOHA 5.4.5, where an alternative tank source strength model will be also available. The new model is called RAILCAR, and it was developed by the Navy as a result of the Jack Rabbit field tests that were performed to better estimate how ammonia and chlorine escape from transportation tanks.
- Hire a mobile app developer and begin work on a proof-of-concept mobile app for CAMEO Chemicals.

### Mid-Term

- Enhance content in CAMEO Chemicals by adding access to the NIOSH (National Institute for Occupational Safety and Health) Pocket Guides and the Spanish Emergency Guides from the DOT Emergency Response Guidebook (ERG).
- Develop a CAMEO Chemicals mobile app that can be installed on phones and tablets and run without an internet connection. The app will be developed for iOS and Android platforms.
- Design a Tier II Data Standard that specifies a format for sharing Tier II data between any programs that adhere to the standard file type, fields, etc. The data standard should be extensible so that it can grow as needed to meet the needs of different stakeholders (e.g., a state with their own online Tier II submission website).
- Continue investigating alternative options for a web-based Tier2 Submit program that do not add too much of a burden on the states hosting the site.
- Gather outreach and training materials at a common location on the web. Consider developing additional materials.

### Longer Term

- Publish the Tier II Data Standard (ongoing). Keep published standard up to date. Continue to inform stakeholders (e.g., states and other Tier II program developers) of proposed changes to data standard in advance.
- Develop an EPCRA Data Viewer mobile app. The app will be empty when it is downloaded, and it will be designed to get information from the CAMEO desktop program. However, the app will use the Tier II data standard. So, theoretically, other Tier II programs using the data standard could also make use of the EPCRA Data Viewer mobile app to view their data.

## Appendices

Appendix A: Tier2 Submit Web Application Vision

Appendix B: Tier2 Submit Web Application Challenges

Appendix C: Tier II Data Standard Considerations



# Appendix A

Tier2 Submit Web Application Vision

## Tier2 Submit Web Application – Our Vision



The purpose of this document is to outline one possible conception of a future multi-user web-accessible version of Tier2 Submit so that states can assess whether or not it would meet their requirements and whether they have the resources to implement it. No final decision has been made for the path forward, but your input is critical.

### The application

The application would be hosted and administered by states or other entities, and accessed by users via a web browser. Initially, users would either upload their last submission file from the desktop version of Tier2 Submit or enter new data in data-entry screens. Most functionality from the desktop version would continue to be supported, but the interface may be quite different. The application would adhere to current web standards.

EPA/NOAA would develop the application in the Python and JavaScript programming languages, using an open-source database management system (e.g. Postgres or MySQL). To facilitate deployment to servers, we would package the application inside a virtual machine (e.g. VirtualBox) or application container (e.g. Docker). We would document configuration for all application components.

The application would include an automated user-account management system. Permissions would be controlled on both user-specific and data-specific levels.

The application would use industry-standard security protocols (e.g., encrypt passwords in the database) and would follow federal government security standards. We would provide security updates as necessary.

When the system identifies problems, it would automatically generate emails to the system administrator and other specified recipients.

We would provide technical support to states and other entities that host the application, but this would be limited by staff and resources.

### Requirements for hosting the application

States would have a number of hardware, software, and personnel needs.

Database server and web server hardware are required. (Alternatively, a cloud server can be used.) The servers may run either Windows or Linux. Host software for the virtual machine or application container would be required (free options are available).

States must register a domain name and SSL certificate through third-party providers.

An experienced system administrator would install and configure the application, manage user accounts, monitor server resources (CPU, memory, and disks), and apply the updates we provide.

States would provide technical support to users. Some training material would probably be available from the CAMEO team. If you have any questions or concerns, please let us know.

# Appendix B

Tier2 Submit Web Application Challenges

# Tier2 Submit Web Application Challenges



A web-based version of Tier2Submit presents a number of challenges – some for developers, some for states that host the application, and some for both.

## Overview

Producing a full-fledged web-based version of Tier2 Submit would likely require us to abandon the existing codebase and start from scratch with a new programming language and database system. It would be a major undertaking even if we hosted the application, but having to target multiple operating systems and server configurations raises the software's complexity at least one order of magnitude beyond the desktop Tier2Submit. We know of no federal agency that has attempted such a project.

For states, the challenge would be in assuming the task of hosting and administering the application. This would involve hardware, software, and personnel requirements.

## Deployment

Downloading and installing the existing desktop Tier2 Submit requires little technical expertise, and one can begin using the program immediately. A web application, however, has many more “moving parts” that must be properly configured. We would aim to simplify this process as much as possible by packaging the application inside a virtual machine or application container. Nevertheless, installation would have to be done by an experienced system administrator, who would also perform some additional configuration.

## User management

In the current Tier2 Submit, all users have full rights to view and edit all data. In contrast, users of the web application would log in with a username and password that will determine the rights which they are granted.

While the application must provide some level of automation for account signup, password changes, etc., it would still be incumbent on someone to, at minimum, approve account requests and reinstate disabled accounts. Note that users would not be limited to submitters; they would also include LEPC members, for example.

## Security

This is another consideration not faced in the desktop environment. With web servers under attack, web applications must take care to avoid vulnerabilities, to detect and take action against hacking attempts, and to maintain a logfile of login attempts. In addition to monitoring and acting on that information, system administrators may choose to add intrusion-prevention software.

## Scaling Resources

When many users are accessing the system simultaneously, performance may deteriorate, and users may experience long waits for the system to respond. To avoid this, the system administrator must monitor disk usage and CPU load, and if necessary add servers or swap out a CPU for a faster one. Such measures could also be taken when high demand is anticipated, such as near the March 1 deadline. To the extent possible, the

application would be designed to permit such flexibility. As an alternative, some states may choose to distribute the load over two or more deployments, such as one for facilities in the west part of the state and another for facilities in the east.

### **Tradeoffs**

It is possible to reduce the burden on states by adding bells and whistles to the software. Some desired features, however, may conflict with others. As with any software, the benefits of adding a feature must be weighed against possible negative impacts on system stability and performance. Finally, we may lack the resources to add everything we'd like, especially in an initial release.

# Appendix C

## Tier II Data Standard Considerations

## Considerations in Selecting a Format for the Tier II Data Standard



### Required

1. It must be extensible, in the sense that other organizations can add elements (e.g. “facility email”).
2. FileMaker must be able to import and export files in this format. We might be able to address this by using plugins, but using native FileMaker functionality is preferable. It requires less coding and is almost certainly faster.
3. Tier2 Submit must be able to properly import the base EPCRA data even from files that contain added elements (see 1 above).
4. The format must be in wide use and well-supported. It should not be rocket science for IT people in other organizations to write code that reads and writes documents in the format.
5. There must be a way to clearly and precisely express the structure of a valid document, including data types. Example: XML schema.
6. Must be able to specify character set (e.g. utf-8).

### Desired

- A. The language/format should provide a standard way to electronically validate incoming documents against our published structure (see 5). However, Tier2 Submit may be unable to use this method, in which case we would write our own validation code.
- B. Human readability is desirable, in the sense that someone familiar with the format can locate information in documents.
- C. Converting documents in our format to other formats should be relatively simple – both for us and for others.
- D. Preferably, FileMaker Server with Custom Web Publishing would be able to directly import and export documents in the format.