U.S. DEPARTMENT OF HOMELAND SECURITY
Science and Technology Directorate

INTERAGENCY MODELING AND ATMOSPHERIC ASSESSMENT CENTER

Overview

➢ The National Response Plan designates the Interagency Modeling and Atmospheric Assessment Center (IMAAC) as the single Federal source of airborne hazards predictions during an Incident of National Significance (INS). IMAAC is responsible for producing and disseminating predictions of the effects from hazardous chemical, biological, and radiological releases.

➢ Knowing the downwind impact from such releases is a key component of developing a common operational picture for response decision making from the local through the Federal levels. In the interest of providing decision makers with immediate information to protect public health and safety, IMAAC also supports responses to major atmospheric releases leading up to an INS.

Composition of IMAAC

The IMAAC goal is to draw upon and coordinate the best available capabilities of participating agencies. The current IMAAC agency Federal partners are the Department of Homeland Security, the Department of Defense, the Department of Energy, the Environmental Protection Agency, the National Oceanic and Atmospheric Administration (Department of Commerce), the Nuclear Regulatory Commission, and the National Aeronautics and Space Administration. IMAAC is not intended to replace or supplant dispersion modeling capabilities that Federal agencies currently have in place to meet agency-specific mission requirements. Rather, it provides interagency coordination to use the most appropriate model for a particular incident and for delivery of a single Federal prediction to all responders.

Why the IMAAC?

Responders need a single, unambiguous, accurate prediction for immediate decision making in the event of a major hazardous atmospheric release. IMAAC provides access to complex modeling tools that incorporate real-time location-specific meteorological data, demographic and geographic data, and first-hand observations about the release from the incident site. IMAAC provides 24/7 experts to run the modeling system, quality assure results, and assist decision makers in the interpretation of model predictions.

Activating the IMAAC

The IMAAC can be activated by designated emergency managers and decision makers in local, state and Federal agencies for significant hazardous material releases. The IMAAC supports the Homeland Security Operations Center (HSOC), the primary hub for domestic incident management. After activation, the IMAAC coordinates with the agencies involved in the response and the HSOC.

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IMAAC Methods

Once activated, the IMAAC will:

- Collect information on the incident including time, location, and type of incident;
- Develop model predictions and standard reports showing health effects and protective actions;
- Refine predictions based on on-scene field measurements or updates from the incident responders;
- Distribute the products and reports to the appropriate parties; and
- Provide reach-back subject matter expert advice on interpretation and use of the products.

Sample IMAAC product

Below is an example IMAAC product. Red zones show areas of potential lethal concentrations, orange represents serious health effects, and yellow approximates the extent of mild reversible effects. Similar color coding by health effects is used for biological, chemical, and radiological releases.

Max 10-min Avg Air Conc. of CHLORINE
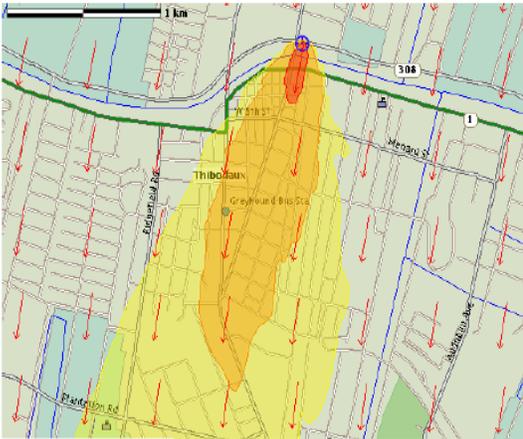
	(ppm) Area Extent	Population	Description
Acute (Short-term) Effects			
🟥	>50 0.03 km2 n/a	100	>AEGL-3: Death or irreversible health effects possible.
🟧	>2.8 0.8 km2 n/a	1,741	>AEGL-2: Serious health effects or impaired ability to take protective action.
🟨	>0.50 5.8 km2 n/a	5,741	>AEGL-1: Minor reversible health effects possible. Possible odor.

Products show:

- Plume hazard areas & distances
- Protective Action Guidelines
- Affected population counts
- Health effects
- Map features
- Meteorological data

Preparedness and Training

To prepare and train for incidents, IMAAC supports the National Exercise Program (NEP). IMAAC also provides reach-back calculations for and deploys liaisons to National Special Security Events (NSSEs). IMAAC conducts periodic training and outreach.

Contact Information

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