SAN DIEGO
HAZARDOUS INCIDENT RESPONSE TEAM

STANDARD OPERATING GUIDELINES

Plume Modeling

	ITEM	DESCRIPTION
☐	**BACKGROUND INFORMATION**	Plume modeling can be used to predict or confirm the concentration of airborne contaminants released from a chemical, biological, radiological, nuclear, or explosive (CBRNE) event. Initial emergency plume modeling is critical for early evacuations and establishing control zones. Static plume modeling provides a model for possible impacts of plume while dynamic modeling confirms in real time the movement of the plume. Different plume modeling software may be used throughout the event to predict and monitor the plume.
☐	**INITIAL SIZE UP**	▪ Chemical ▪ Release Rate ▪ Container or source ▪ Wind Speed and Direction ▪ Temperature ▪ Atmospheric conditions (humidity, rain, etc.) ▪ Topography ▪ Urban environment ▪ Population Density
☐	**Modeling Programs and Equipment**	▪ Emergency Response Guide ▪ AreaRaes and Safety Suite ▪ PEAC- Palmtop Emergency Action for Chemicals ▪ ALOHA- Aerial Locations of Hazardous Atmospheres ▪ IMAAC- Interagency Modeling and Atmospheric Assessment Center
☐	**Emergency Response Guide**	▪ Open App and locate Chemical being released ▪ Click Map in the upper right corner ▪ Enter required information ▪ Click Plot in the upper right corner ▪ Map will show initial isolation as well a rudimentary plume model for possible evacuations/shelter in place areas
☐	**AreaRaes and Safety Suite**	▪ Used for Dynamic Plume Modeling and confirmation. ▪ See AreaRAE SOG for detailed instructions on start up and connection ▪ Start, connect and deploy AreaRaes ▪ Position AreaRaes to cover priority areas (i.e. populated areas, IC Post)
☐	**PEAC**	▪ Operated by SDFD-HIRT
☐	**ALOHA and Marplot**	▪ Open ALOHA on computer ▪ Click Set Up and select chemical ▪ Click Set Up and select Atmospheric ▪ Click Set Up and select source. Choose container or source type ▪ Click Display and select threat zone to see AEGLs ▪ Click Sharing and select MARPLOT. Click Go To Map ▪ MARPLOT will automatically open ▪ At the top, click ALOHA and select SET SOURCE POINT AT CLICK POINT

		▪ Plume model with AEGLs will be generated
☐	**IMAAC**	▪ Call the IMAAC Technical Operations Hub at (877) 240-1187 and be prepared to provide as much incident information as available. This may include but is not limited to: ▪ WHO to contact for follow up – name, email address, agency, title, phone number, etc. ▪ WHAT was released – type of material (chlorine, anthrax), amount of agent released (90-ton rail car, 2 lbs.), form of material (vapor, liquid), etc. ▪ WHEN the incident occurred – date, time, time zone, suspected duration of release, etc. ▪ WHERE the incident is located – street address, city, state, facility, road intersection, latitude, longitude, etc. ▪ WHY you are requesting the product – inform protective actions (shelter-in-place, evacuation), protect responder safety (determine appropriate personal protective equipment), inform medical surge, prevent further contamination of environment, determine secondary hazards, etc. ▪ HOW the incident happened – type of incident (spill, fire, explosion), etc
☐	**Public Guidelines**	▪ **Acute Exposure Guideline Levels for Airborne Chemicals (AEGLs)** ▪ AEGL 1: Notable discomfort, irritation, or certain asymptomatic non-sensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure. ▪ AEGL 2: Irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape. ▪ AEGL 3: Life-threatening health effects or death. ▪ **Emergency Response Planning Guidelines** ▪ ERPG-3 is the maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects. ▪ ERPG-2 is the maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action. ▪ ERPG-1 is the maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing more than mild, transient adverse health effects or without perceiving a clearly defined objectionable odor
☐	**APCD**	▪ APCD Duty ▪ Can request information from APCD Meteorologist
☐	**EPA**	▪ Region 9 Duty ▪ (800) 300-2193 ▪ Request EPA resources
☐	**Cal OES**	▪ (916) 255-6504 ▪ Request resources from CST-9