



## Public Health Brief

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### The Evolution of a Hazardous Materials Incident

Last Wednesday, May 9<sup>th</sup>, an unfortunate accident occurred on Highway 88 across from the Caltrans facility in Woodfords. This resulted in the death of the tanker truck driver, and the spill of 8,000 gallons of liquid sodium hypochlorite, commonly known as bleach.

I have been asked to outline for the community the initial phases of a hazardous materials (hazmat) response, and the implications for the health of responders and the public. As we go through this, I hope you will have an increased appreciation for your first responders who are committed to protecting you, our environment, and property. Thank you to all of them!

The first step is being made aware of an incident with hazmat potential. In this case, a truck off the road with a ruptured tank and a smell were the first clues. A hazmat response is different than most other situations. Rushing in to save someone in a burning house or approaching an overturned car is entirely different. A hazmat response is safe, slow, and methodical. The key is safety – first, last, and always!

Initially, information is very limited as to the potential hazards, whether they be explosion, fire, toxicity, asphyxiation, radiation, or corrosion. First responders will analyze all available information, including the weather (wind speed and direction), and any identifying information on the vehicle (placard), but only from a safe distance! Response needs to be safe and competent – within their training levels, response resources, and equipment capability. The health of all persons involved – driver, first responders, and public – takes precedent over any concerns about environment and property. Therefore, initial response is defensive rather than offensive. Objective is to save lives, limit casualties, protect the environment, limit property damage, and restore things back to normal if possible, in that order only.

In this incident, first responders knew a tanker trailer was involved, the release smelled like “chlorine”, and it was a liquid. Out of the possible 70,000 plus potential chemical hazards, this narrows it down to about 20, but



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they still did not know which one, nor the possible risks of fire, explosion, health hazards, etc. Initial response included establishing a perimeter – not allowing anyone in this zone. Any approach should be upwind, uphill, and upstream. Any responders allowed within the perimeter should wear a self-contained breathing apparatus (SCBA), remembering that the fire department “turn-outs” may only provide limited protection from chemical splashes. Decisions were made for evacuating the public or advising “shelter-in-place” (stay inside with doors, windows, and ventilation systems closed or off) for anyone within one-half mile from the incident. This challenges the usual human impulse to rush in, whether public “Good Samaritans”, media, or professional first responders.

Prior to identification of the chemical, one of the 20 odd choices to consider was chlorine. Since chlorine can form a toxic plume that moves with the wind along the ground (heavier than air), recommendations were to protect persons down wind (with moderate wind speeds) for 2.1 miles during the day, and more at night, through evacuation or shelter-in-place orders.

Once the chemical was identified as sodium hypochlorite (bleach), protective measures were then tailored to this specific chemical and its hazards. Is it flammable or combustible? No. Is there radiation? No. Is it corrosive? Yes. It is extremely corrosive, with the highest degree of human toxicity. Symptoms of exposure to fumes would include coughing and eye irritation. Direct exposure to the liquid would cause severe skin irritation and burning. Ingestion would also have serious consequences. As there is no plume or vapor cloud, evacuation and shelter-in-place orders can be lifted, and a new perimeter of at least 150 feet can be established. In the presence of oxygen (air) and sun (UV light), the chemical reacts easily with organic matter and converts readily to sodium chloride (table salt) and calcium chloride (road salt). Sodium hypochlorite (in concentrations of 3-8%) has been widely used for disinfecting water supplies and is safe and practical to use. You probably have some in your home (e.g., Chlorox).

In many ways, this incident could have been much worse, with explosion, fire, further loss of life, and damage to the environment and property. Appropriate measures taken by professional first responders (law, fire, environmental and public health) were appropriate and intended to protect human health and were tailored to the information available at each phase of the response.

Evaluation of the response will be conducted, with lessons learned resulting in changes to plans and continued education of responders. Remember, accurate information for the public will be issued only through the Alpine County Office of Emergency Services, which is the Sheriff’s Department. We thank everyone – responders and public – for their part in responding to this incident and following recommendations intended to protect the health of all.

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