

# **A Nor-Cal EMS Webcast for Continuing Education**

The CHEMPACK Project was presented by Louis Lallo, PharmD, MBA, CDPH Emergency Preparedness Office and recorded live at the April 2014 Northstate Prehospital Conference.

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California Department of Public Health  
Emergency Preparedness Office and recorded  
live on April 26, 2014 in front of an audience  
at the 10<sup>th</sup> Annual Northstate Prehospital  
Conference by Engineer Bill Bogenreif.

# THE CHEMPACK PROJECT

An Overview

By

Louis Lallo, PharmD, MBA

California Department of Public Health

Emergency Preparedness Office

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# Emergency Pharmaceutical Support Unit (EPSU)



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# CHEMPACK

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## **TOPICS**

- **Overview of CHEMPACK Project**
- **Types of Nerve Agents**
- **Treatment of O-P poisoning**
- **Incident Response**
- **Site Responsibilities**
- **Status of CHEMPACK Project in California**
- **Response Considerations**

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## **SNS IN 60 SECONDS**

- **Daughter of the NPS (1999)**
- **Over 4 billion dollar portfolio**
- **Strategically located**
- **Includes: antibiotics, vaccines, antivirals, antidotes, airway management, blast & burn care, wound care**

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## MISSION STATEMENT

- **Implement a nationwide project for the “forward” placement of nerve agent antidotes. To provide state and local governments a sustainable resource that increases their capability to respond quickly to a nerve agent event.**

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## BACKGROUND

- **“Quickly”**
  - **12-hour response time: too long in the event of a nerve agent attack**
  - **No nerve agent antidote stocks at state/local levels**
  - **Hospitals carry limited or no nerve agent antidotes**

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## BACKGROUND

(continued)

- **“Sustainable” (Nerve Agent Antidotes)**
  - **Variable and short shelf lives**
  - **Expensive**
  - **Not an easily sustainable resource**
  - **Shelf Life Extension Program**

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## **SHELF LIFE EXTENSION PROGRAM (SLEP)**

- **FDA and DoD program to extend shelf-life of pharmaceuticals**
- **Provides quality assurance of stored materiel**
- **Environmental monitoring ensures product integrity**

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# TYPES OF NERVE AGENTS

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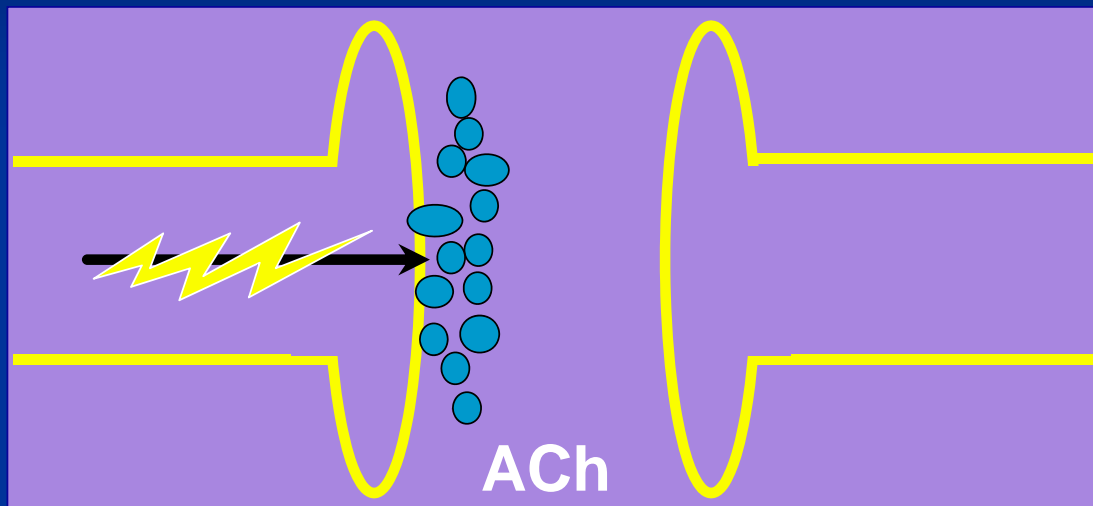
# Nerve Agents

- A substance that causes biological effects by inhibiting acetylcholinesterase



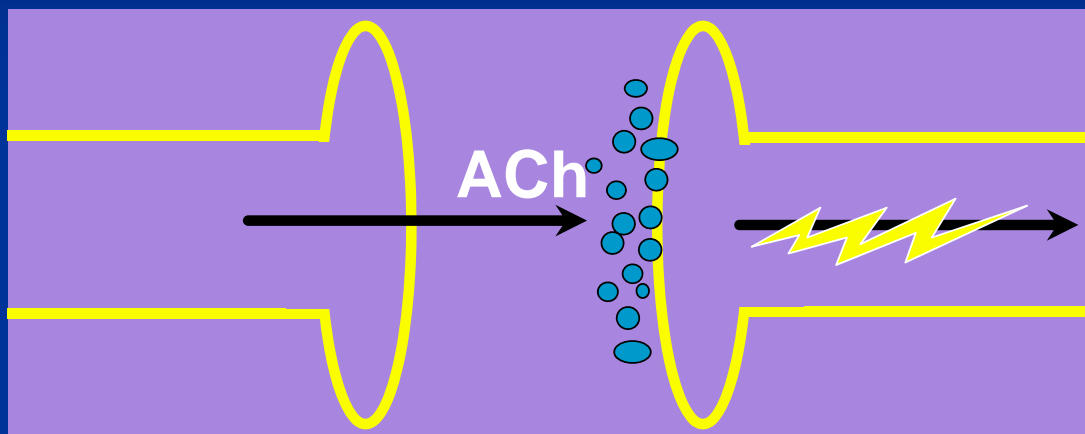
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## Normal Nerve Function

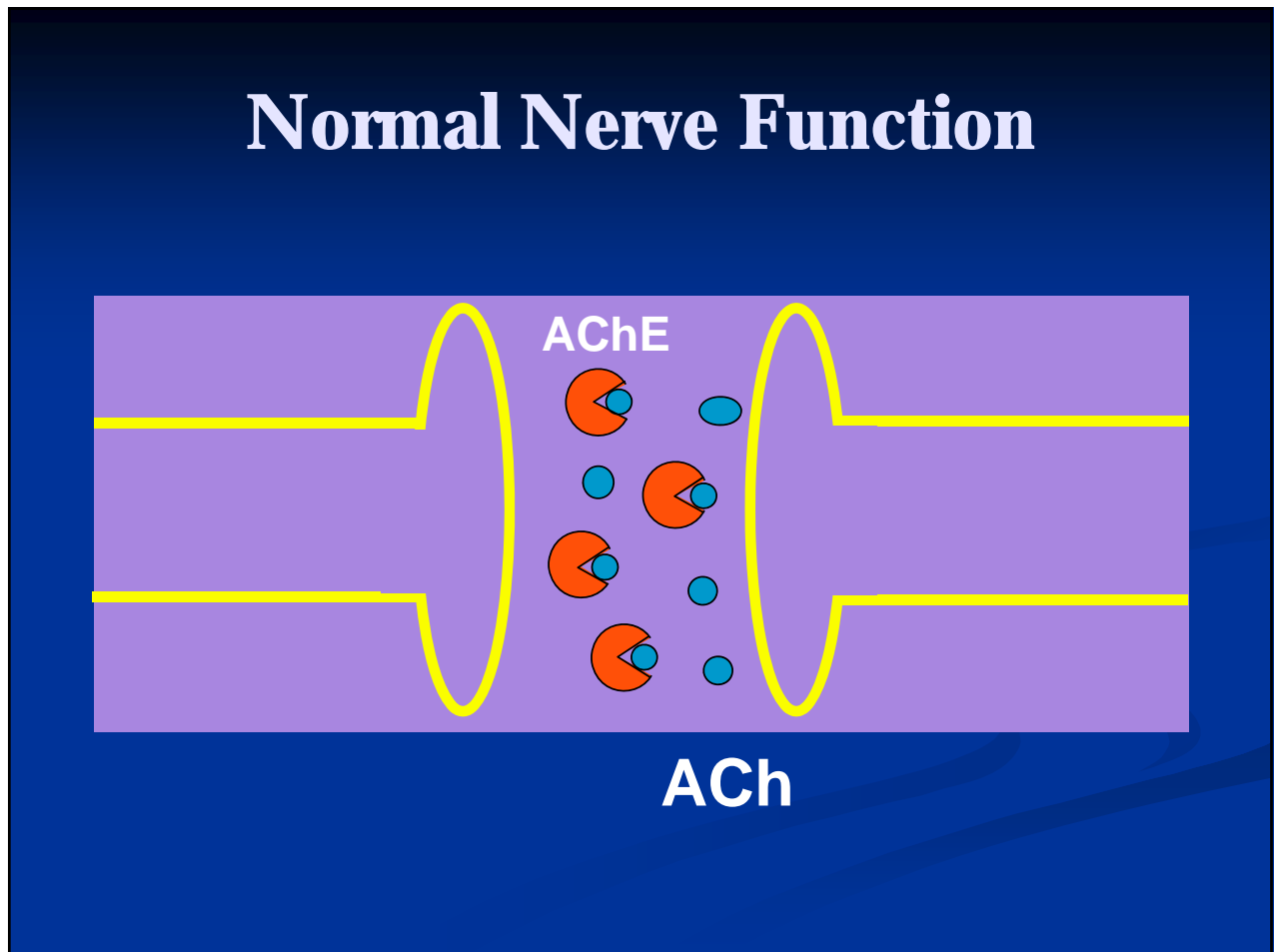


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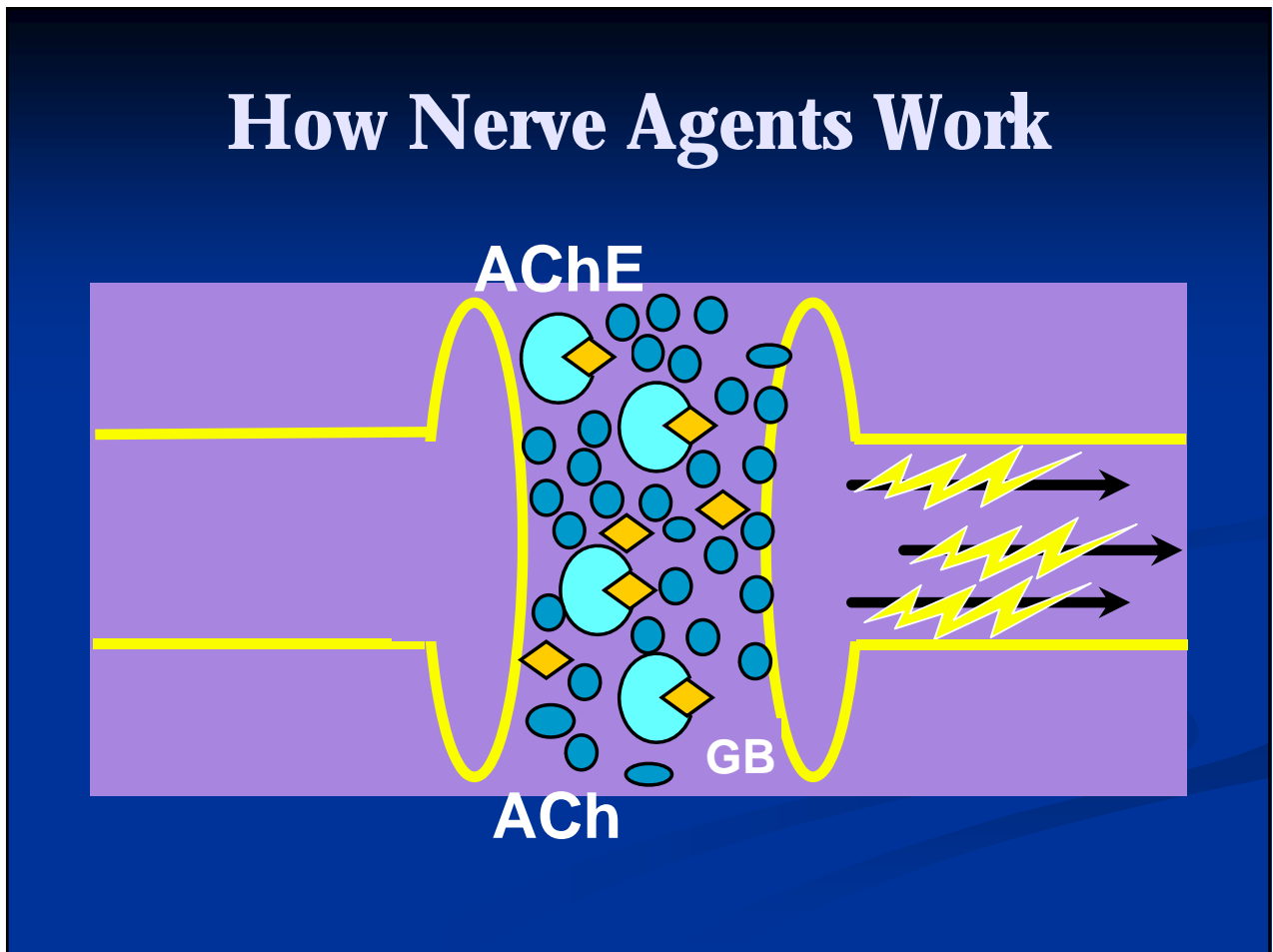
## Normal Nerve Function



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# Nerve Agents

- Acetylcholine accumulates
- Effects are due to excess stimulation of body organs.



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# Types of Nerve Agents

■ Organophosphate Pesticides	=	Nerve Agents
Slow to Act		Quick Acting
Longer Duration		Short Duration
Less Severe		Very Severe

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# Types of Organophosphates

- Carbamates
  - Physostigmine (Antilirium)
  - Neostigmine (Prostigmine)
  - Pyridostigmine (Mestinon)
  - Sevin (insecticide)
- Organophosphate Pesticide
  - Malathion
  - Diazinon

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## Types of Nerve Agents

- GA (Tabun)
- GB (Sarin)
- GD (Soman)
- GF (Cyclosarin)
- VX

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# Nerve Agents

- Most toxic chemical agents: are liquids, not “gas”
- GB (Sarin): vapor or liquid hazard; non-persistent
- VX: liquid hazard; persistent
- Penetrate skin, eyes, lungs
- Loss of consciousness, seizures, apnea, death
- Diagnosis made clinically, confirmed by laboratory test

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# NERVE AGENT SYMPTOMS

## Mnemonics for Nerve Agent Exposure

### “SLUDGEM”

- **S** Salivation
- **L** Lacrimation
- **U** Urination
- **D** Defecation
- **G** GI distress
- **E** Emesis
- **M** Miosis (pinpoint pupils)

### “DUMBBELS”

- **D** Diarrhea
- **U** Urinary incontinence
- **M** Miosis/Muscle fasciculations
- **B** Bronchorrhea
- **B** Bronchospasm
- **E** Emesis
- **L** Lacrimation
- **S** Salivation

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# Organophosphate Poisoning



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# NERVE AGENT TREATMENT

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# Nerve Agents Treatment

- Self-protection



- Decontamination



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## Nerve Agents Treatment (Continued)

- Airway/ventilation
- Antidotes
  - Atropine
  - 2-PAMCl
  - Diazepam



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# CHEMPACK EQUIPMENT

## SENSAPHONE 2050



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# PHARMACEUTICALS



**Mark I  
Auto-injector**



**DouDote®  
Auto-injector**



**Diazepam  
Auto-Injector**



**Atropine, Pralidoxime, And  
Diazepam Multi-dose Vials**

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# PHARMACEUTICALS

## ■ Pediatric Issues:



- Pediatric Atropen - FDA recently approved in various strengths
- Pralidoxime (2PAM-Cl) – FDA approved for children <16, September 2010 either in multidose vial or auto-injector.
- Some medical protocols describe an off-label use. This is between individual physician and patient

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## STANDARD CONTAINERS

The CHEMPACK Project provides two types of containers:

- **Emergency Medical Service (EMS) Container: Designed for emergency responders**
  - Mostly auto-injectors (allows for rapid administration)
  - Some multidose vials for variable dosing with elderly or pediatric patients
- **Hospital Container: Designed for hospital dispensing**
  - Mostly multidose vials for variable dosing and prolonged treatment
  - Also contains auto-injectors for rapid use

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## **CHEMPACK PATIENT NUMBERS (FOR NERVE AGENT ANTIDOTE)**

- EMS – 454 patients
  - Hospital – 1,000 patients
  - Funding
  - DoD Sarin Model\*:
    - 30% severe exposure
    - 40% moderate exposure
    - 30% light exposure
- \* Not all nerve agents are created equal

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# Headlines from around the world...

“Fallout over chemical  
attack risk”  
-[The Guardian](#), 2/22/05



“[New fears U.S. will be struck again](#)” –Sacramento Bee, 7/31/05



“Chemical Spill In Dearborn Sends  
Workers To Hospital” –Detroit.com

“CDC shipping 'chem-packs' to states  
Long-awaited antidotes against chemical  
weapons”  
-MSNBC, 8/3/05



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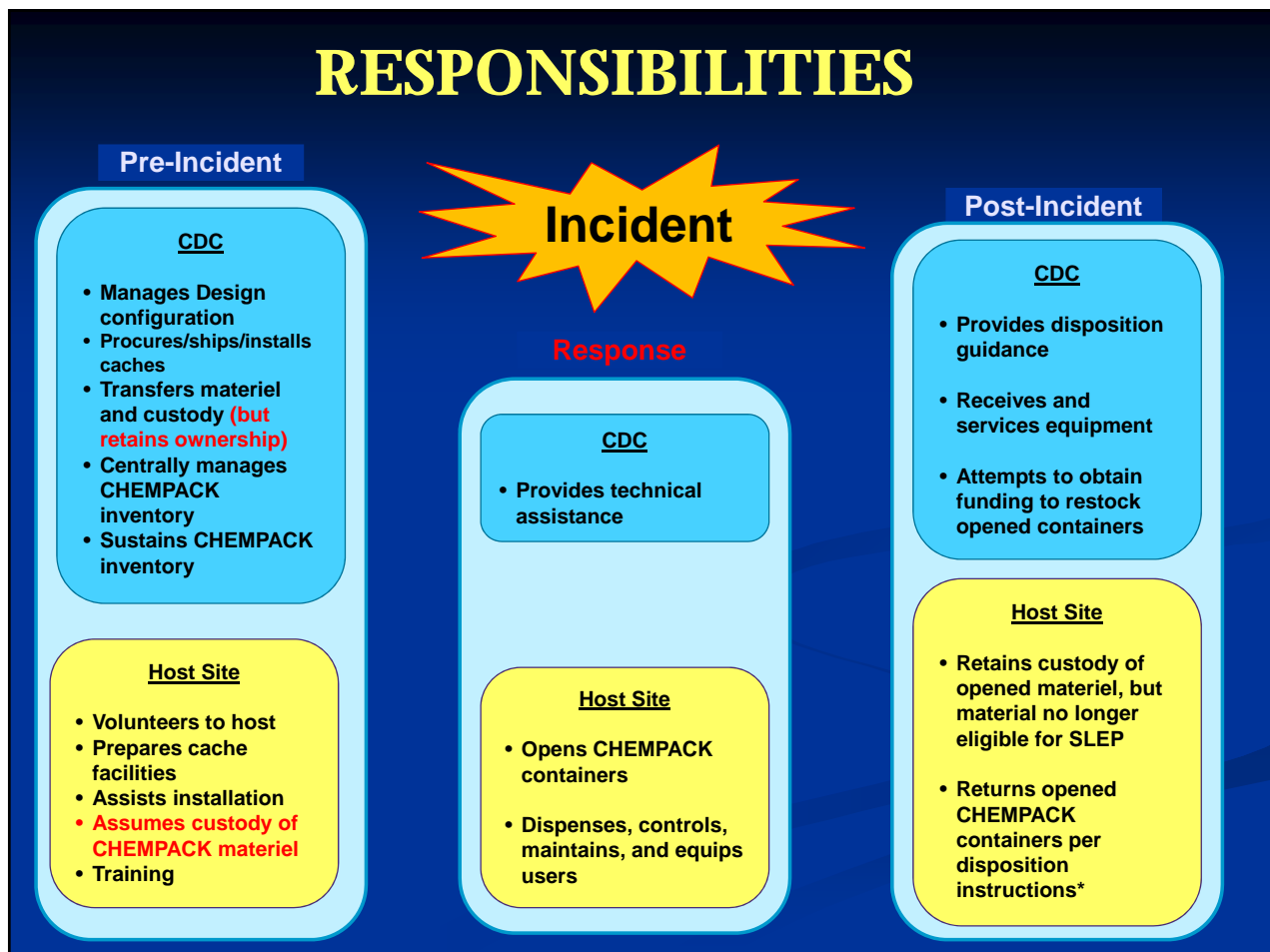
## CA O-P Incidents

- **1999- Fresno Salt Shaker case(100)**
- **2007 – Sacto Farm Workers (30 )**
- **2/2007 – Marin malathion suicide**
- **7/2007- truck accident near Delano**
- **Redding – Barrel falls off truck**
- **El Dorado- Barel falls off truck**
- **12/31/13- suicide attempt - Napa**

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# Observations from Bowman Spill Incident

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## **SITE RESPONSIBILITIES**

- **Provide name and DEA registrant numbers of personnel signing for CHEMPACK**
- **Provide list of all personnel with access to CHEMPACK**

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## **SITE RESPONSIBILITIES**

(continued)

- **Assume custody of CHEMPACK materiel**
- **Only Pre-position CHEMPACK materiel with approval from CDPH/EPO and CDC**
- **Agree to break CHEMPACK container seal only when the following conditions are met:**

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## **CDC CONDITIONS FOR USING CHEMPACK DRUGS**

- Threatens the medical security of the community; and
- Places multiple lives at risk; and
- Is beyond local emergency response capabilities; and
- The material is medically necessary to save human life

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## CASE STUDY

- Man self-administered Malathion in Napa County on 12/31/13 at 1143hrs
- Hospital requested 2-PAM from CHEMPACK site in Sonoma County
- CHP picked up via helicopter
- 2-PAM administered 110 min from time of ingestion and 83 min from time pt arrived at hospital
- Patient survived and discharged

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# CALIFORNIA OVERVIEW

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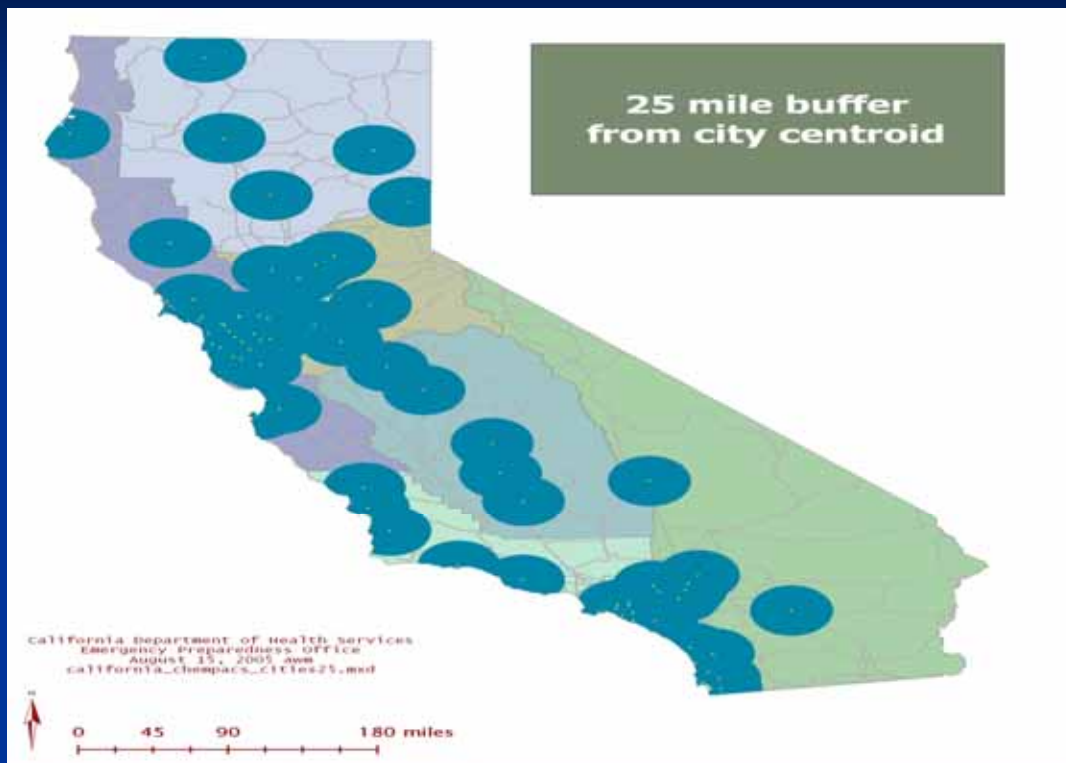
## **CONFIDENTIALITY:**

- **The information presented here will be kept on a need-to-know basis**
- **The information presented here is not covered under the Freedom of Information Act (FOIA)\***

\*Protected under 42 USC§ 247d-6b

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## California CHEMPACK Coverage



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# **Response Considerations (unique in each OA)**

## **A few questions to get you thinking.....**

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**If you were IC and needed  
CHEMPACK material, who  
would you contact?**

**What is the chain of events that  
would occur from that point until  
you had your material?**

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# **Where does your organization keep information for CHEMPACK program?**

**Site Locations  
Types of Containers  
Contact Information**

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**What entity in your City (or OA)  
is identified to transport  
CHEMPACK material to Pre-  
Hospital or Hospital locations?**

**Are there options to optimize  
transport for any given situation?**

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**If you were IC and made decision  
to deploy CHEMPACK material  
to pre-hospital treatment site,  
how would you determine which  
medications and how much of  
each?**

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**After Pre-Hospital treatment you  
need to get CHEMPACK  
material to each hospital  
receiving patients... what are  
your options for doing this?**

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**So, now that your interests have  
been peaked.....**



Take it from here for future training/exercises!  
Be involved... Be ready.

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## IN CONCLUSION...

- **CHEMPACK Project has the potential to save lives in case of a nerve agent attack or accidental exposure**
- **The effectiveness of the CHEMPACK Project depends on how well we plan and train**

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# QUESTIONS?

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**THANK YOU!**

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