

April 26, 2024

## **Guidance purpose**

This guidance document outlines planning considerations to guide local jurisdictions in the development of locally funded, procured, and managed nerve agent and organophosphate exposure incident medical countermeasures. This guidance is meant to supplement the existing federal CHEMPACK program resources.

## **What is the federal CHEMPACK program?**

Originally named the National Pharmaceutical Stockpile (NPS), CHEMPACK began as an initiative by the Centers for Disease Control and Prevention's (CDC) Division of Strategic National Stockpile (SNS) in 1983. Once Congress charged CDC with stockpiling vaccines and pharmaceuticals in 1999, the program was piloted in three specific geographical areas by September 2002. Oversight and operational control moved to the Administration for Strategic Preparedness and Response (ASPR) in 2018.

The intended mission and purpose of the CHEMPACK program is to provide, monitor and maintain a nationwide program for the forward placement of nerve agent antidotes and to provide state and local governments a sustainable resource to improve their capability to respond quickly to a nerve agent (NA) incident.

The CHEMPACK program prepositions nerve agent antidotes across the state in the event of an accidental or intentional release of nerve agents from organophosphates (OP). Indiana's population-based federal allocation of cache containers includes 38 containers across 32 sites. Depending on the cache type, a cache can dispense between 454 (EMS cache) and 1,000 (hospital cache) doses of medication. These pre-positioned containers contain diazepam, 2-PAM Chloride (pralidoxime chloride), and atropine in autoinjector pens or multi-use vials, in various amounts depending on container type. More information on the Indiana CHEMPACK program can be found at [IN CHEMPACK](#).

Federal CHEMPACK Cache Formulary	
Cache Type	Cache Contents
EMS (454 dose capacity)	85% Autoinjectors 15% Multi-use vials
Hospital (1,000 dose capacity)	85% Multi-use vials 15% Autoinjectors
Medications	Indications
Atropine	Acetylcholine (ACH) antagonist indicated as the primary antidote in nerve agent poisonings
Pralidoxime	Recommended as an early treatment in nerve agent toxicity to displace organophosphates from acetylcholinesterase (AChE)
Diazepam	First-line treatment for seizures due to nerve agent poisoning

Seizalam (midalozam)	Management of acute seizures due to nerve agent toxicity
Sterile water	For use with injectable medications

**Local jurisdictional assessment and benefits**

Most local or regional hospitals carry very limited supplies of treatments for nerve agent exposures. The widespread distribution of these pre-determined CHEMPACK cache locations can leave some communities, especially those in more rural areas, in need of these medications.

According to the National Institutes of Health (NIH), nerve agent toxicity caused by accidental or intentional exposure to organophosphates affects more than 10,000 people annually in the United States and can cause serious respiratory depression leading to death in as little as 10 minutes (NIH, 2022). More information on nerve agent exposure can be found at the NIH website link here: [NIH: Nerve Agents](#).

Having a small, locally procured, purchased and managed cache of medical countermeasures for nerve agent and organophosphate exposure would allow a greater number of jurisdictions to control these critical, life-saving medications. As noted above, the time between exposure and onset of symptoms can be very short, thus having these medications more readily available at the local or jurisdictional level could drastically reduce administration time, ultimately saving Hoosier lives. Each jurisdiction would have the choice, depending on need, of which size or type of cache to be housed in the event of a chemical or nerve agent incident.

An assessment of proximity to existing federal CHEMPACK cache assets and the local population is recommended. For an example formulary calculation, see the **At a Glance** panel.

**Guidance for local jurisdictions in development of locally developed cache**

Any local jurisdiction, regional hospital or other medical entity with the capacity and capabilities to store these medications may choose to procure and store enough of the above medications to treat their local jurisdiction. With the development of a local cache to support your community, facilities should have processes and procedures in place to maintain a level of response readiness in the event of an emergency to ensure the medication reaches the person in need quickly.

Having medications more readily available would allow for emergency medical services (EMS) responders to administer the medication while providing enough time to transport exposed patients to hospitals for further treatment, without risking avoidable harm. The recommended formulary of each

**At a Glance: Jurisdictional Assessment Guidance**

**America's Poison Center's Impact Data**

Average no. of organophosphate exposures:

- 6.14 per 1,000 population
- More information: [NPDS: 39th AR](#)

**Jurisdictional Impact**

To understand potential impact on your jurisdiction, reference the following links:

- [IN Farmland Stats](#)
- [Farmworker Health](#)
- [IN Farmworker Program](#)
- [OP Health Risks](#)

**Jurisdictional Cache Calculation**

(6.14/1,000 population)  
 \*jurisdictional population= ~ number of doses



pack is listed in the table below and **must** be purchased by the jurisdiction or organization assuming responsibility of the medications. The exact contents can be subject to change based upon the jurisdiction's perceived need or budget. The county or jurisdiction's health officer may need to issue a standing order for these medications to ensure proper and timely use, if necessary. Submitting a completed voluntary REDCap survey – [“Local Nerve Agent Resource Cache Reporting”](#) – to IDOH may be utilized by local facilities to conduct initial reporting and updates to their cache formulary and facility contact information. IDOH will utilize this for situational awareness only.

Facility readiness is a major point of consideration for any facility or organization considering procuring and storing a cache. Facility storage recommendations include but are not limited to a secured, temperature-controlled room large enough to accommodate the quantity of supplies decided upon, a method to monitor for temperature changes, and properly functioning fire detection, suppression and alarm systems. Facilities should also have a plan or protocol in place to check, track and replace expired medication or supplies. For more recommendations, please visit the Indiana CHEMPACK Plan.

### **Nerve agent antidote dosage requirements**

The table below shows the recommended dosage ranges for nerve agent or organophosphate toxicity antidotes for children and adults. These recommendations may vary depending on other variables that will be presented after the table. A full description of each medication, including rationale behind their use and administration instructions for adults, can be found at the Chemical Hazards Emergency Medical Management (CHEMM) site: [HHS-CHEMM](#). For children, this information can be found on the American Academy of Pediatrics site: [AAP: NA Attacks on Children](#)

<b>Age</b>	<b>Medication</b>	<b>Dosage Range</b>
Child	Atropine	0.05mg/kg (max 4mg)
	Pralidoxime	50mg/kg (max 2000mg)
	Diazepam	0.05 to 0.1mg/kg
	Midazolam	0.15 to 0.2mg/kg
Adult	Atropine-autoinjector (Part of DuoDote®)	2.1mg in 0.7mL
	Pralidoxime-autoinjector (Part of DuoDote®)	600mg in 2mL
	Diazepam-autoinjector (In conjunction with DuoDote®)	2mg in 0.4mL
	Midazolam	5mg/mL

\*DuoDote® autoinjectors contain 2.1mg/0.7mL atropine and 600mg/mL pralidoxime.

### **Additional considerations**

In addition to the above subject matter, several other variables can necessitate the storage and utilization of a CHEMPACK. These variables include but are not limited to the following:

- Type of organophosphate or nerve agent released
- Length of exposure time to the OP or NA
- Severity of signs and symptoms related to OP or NA exposure (for a description of signs and symptoms, please refer to the NIH Nerve Agent link above)
- Time and access to continued care and treatment

