Identifications

- **CAS Number:** 77-81-6
- **Synonyms/Related:**
  - Dimethylamidoethoxyphosphoryl cyanide
  - Dimethylaminocyanphosphorsaeureaethylester [German]
  - Dimethylphosphoramidocyanidic acid, ethyl ester
  - EA 1205
  - Ethyl dimethylamidocyanophosphate
  - Ethyl dimethylphosphoramido cyanidate
  - Ethyl dimethylphosphoramidocyanidate
  - Ethyl N,N-dimethylphosphoramidocyanidate
  - Ethyl N-dimethylphosphoramidocyanidate
  - Ethyl phosphorodimethylamidocyanidate
  - Ethylester-dimethylamid kyseliny kyanfosfonove [Czech]
  - GA (chemical warfare agent)
  - Gelan I
  - Le-100
  - O-Ethyl N,N-dimethyl phosphoramidocyanidate
  - O-Ethyl N,N-dimethylphosphoramidocyanidate
  - Phosphoramidocyanidic acid, dimethyl-, ethyl ester
  - T-2104
  - Taboon A
  - Tabun
  - TL 1578
  - Trilon 83

2004 Emergency Response Guidebook Information

Produced by the US DOT the ERG is designed to aid first responders in quickly identifying specific or generic hazards of materials involved in an incident and protecting themselves and the general public during the initial response phase of an incident.

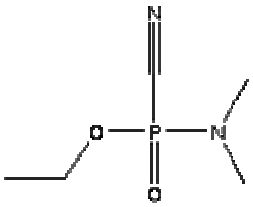
UN#	Guide	Name of Material	ISO	H20 React	TIH Gas(es)
2810	153	Tabun	No	No	

Isolation and Protective Action Distances Table

UN#	Name of Material	SMALL SPILLS						LARGE SPILLS					
		First ISOLATE in all Directions		Then PROTECT Persons Downwind During-				First ISOLATE in all Directions		Then PROTECT Persons Downwind During-			
				Day		Night				Day		Night	
		m	ft	km	mi	km	mi	m	ft	km	mi	km	mi
Please see: How to use the table of initial isolation and protective action distances													
2810	Tabun (when used as a weapon)	30	100	0.4									

Tabun

- **Formula:** $C_5H_{11}N_2O_2P$
- **Molecular weight:** 162.1269
- **IUPAC Standard InChI:**
  - `InChI=1S/C5H11N2O2P/c1-4-9-10(8,5-6)7(2)3/h4H2,1-3H3`
  - Download the identifier in a file.
- **IUPAC Standard InChIKey:** `PJVJTCIRVMBVIA-UHFFFAOYSA-N`
- **CAS Registry Number:** 77-81-6



- **Chemical structure:**
  This structure is also available as a 2d Mol file .
- **Other names:** O-Ethyl N,N-dimethyl phosphoramidocyanidate; GA; Phosphoramidocyanidic acid, dimethyl-, ethyl ester; Dimethylamidoethoxyphosphoryl cyanide; Ethyl dimethylamidocyanophosphate; Ethyl dimethylphosphoramidocyanidate; Dimethylaminocyanphosphorsaeureaethylester; Dimethylphosphoramidocyanidic acid, ethyl ester; EA 1205; Ethyl N,N-dimethylphosphoramidocyanidate; Ethyl N,N-dimethylamino cyanophosphate; Ethylester-dimethylamid kyseliny kyanfosfonove; Gelan I; Le-100; MCE; T-2104; TL 1578; Taboon A; Trilon 83; Ethyl dimethylamidocyanidophosphate
- **Permanent link** for this species. Use this link for bookmarking this species for future reference.
- **Information on this page:**
  - Notes / Error Report
- **Other data available:**
  - Mass spectrum (electron ionization)
  - Gas Chromatography
- **Options:**
  - Switch to calorie-based units

GA. Basic information

Product Name:	GA.
Synonyms:	(dimethylamino-ethoxy-phosphoryl)formonitrile;tabun;AGENTGA;CYCLOSARIN;ETHYLN,N-DIMETHYLPHOSHORAMIDOCYANIDATE;ETHYLN,N-DIMETHYLPHOSPHORAMIDOCYANATE;Ethyl dimethylamidocyanophosphate: (Tabun: GA);Cyano(dimethylamino)phosphinic acid ethyl ester
CAS:	**77-81-6**
MF:	C5H11N2O2P
MW:	0
EINECS:	
Product Categories:	
Mol File:	Mol File

GA. Chemical Properties

Safety Information

RIDADR	2810
HazardClass	6.1(a)
PackingGroup	I

What tabun is

- Tabun is a man-made chemical warfare agent classified as a nerve agent. Nerve agents are the most toxic and rapidly acting of the known chemical warfare agents. They are similar to pesticides (insect killers) called organophosphates in terms of how they work and what kinds of harmful effects they cause. However, nerve agents are much more potent than organophosphate pesticides.
- Tabun was originally developed as a pesticide in Germany in 1936.
- Tabun is also known as "GA."
- Tabun is a clear, colorless, tasteless liquid with a faint fruity odor. Tabun can become a vapor if heated.

Where tabun is found and how it is used

- It is possible that tabun or other nerve agents were used in chemical warfare during the Iran-Iraq War in the 1980s.
- Tabun is not found naturally in the environment.

How people can be exposed to tabun

- Following release of tabun into the air, people can be exposed through skin contact, eye contact, or inhalation (breathing in the tabun).
- Tabun mixes easily with water, so it could be used to poison water. Following release of tabun into water, people can be exposed by drinking contaminated water or getting contaminated water on their skin.
- Following contamination of food with tabun, people can be exposed by eating the contaminated food.
- A person's clothing can release tabun for about 30 minutes after contact with tabun vapor, which can lead to exposure of other people.
- Tabun breaks down slowly in the body, meaning that repeated exposures to tabun and/or other nerve agents can have a cumulative effect (build up in the body).
- Because tabun vapor is heavier than air, it will sink to low-lying areas and create a greater exposure hazard there.

How tabun works

- The extent of poisoning caused by tabun depends on the amount of tabun to which a person was exposed, how the person was exposed, and the length of time of the exposure.
- Symptoms will appear within a few seconds after exposure to the vapor form of tabun, and within a few minutes to up to 18 hours after exposure to the liquid form.
- All the nerve agents cause their toxic effects by preventing the proper operation of the chemical that acts as the body's "off switch" for glands and muscles. Without an "off switch," the glands and muscles are constantly being stimulated. They may tire and no longer be able to sustain breathing function.
- Compared with other nerve agents, tabun is more volatile than VX but less volatile than sarin. The higher a chemical's volatility, the more likely it will evaporate from a

liquid into a vapor and disperse into the environment. People can be exposed to the vapor even if they do not come in contact with the liquid form.

- Because of its high volatility, tabun is an immediate but short-lived threat and does not last a long time in the environment.
- Because tabun is more volatile than VX, it will remain on exposed surfaces for a shorter period of time compared with VX.
- Because tabun is less volatile than sarin, it will remain on exposed surfaces for a longer period of time compared with sarin.

Immediate signs and symptoms of tabun exposure

- Although tabun has a faint fruity odor, the odor may not be noticeable enough to give people sufficient warning about a toxic exposure.
- People exposed to a low or moderate dose of tabun by inhalation, ingestion (swallowing), or skin absorption may experience some or all of the following symptoms within seconds to hours of exposure:
  - Runny nose
  - Watery eyes
  - Small, pinpoint pupils
  - Eye pain
  - Blurred vision
  - Drooling and excessive sweating
  - Cough
  - Chest tightness
  - Rapid breathing
  - Diarrhea
  - Increased urination
  - Confusion
  - Drowsiness
  - Weakness
  - Headache
  - Nausea, vomiting, and/or abdominal pain
  - Slow or fast heart rate
  - Abnormally low or high blood pressure
- Even a tiny drop of nerve agent on the skin can cause sweating and muscle twitching where the agent touched the skin.
- Exposure to a large dose of tabun by any route may result in these additional health effects:
  - Loss of consciousness
  - Convulsions
  - Paralysis
  - Respiratory failure possibly leading to death
- Showing these signs and symptoms does not necessarily mean that a person has been exposed to tabun.

What the long-term health effects are

Mild or moderately exposed people usually recover completely. Severely exposed people are not likely to survive. Unlike some organophosphate pesticides, nerve agents have not been associated with neurological problems lasting more than 1 to 2 weeks after the exposure.

How people can protect themselves, and what they should do if they are exposed to tabun

- Recovery from tabun exposure is possible with treatment, but the antidotes available must be used quickly to be effective. Therefore, the best thing to do is avoid exposure:
  - Leave the area where the tabun was released and get to fresh air. Quickly moving to an area where fresh air is available is highly effective in reducing the possibility of death from exposure to tabun vapor.
    - If the tabun release was outdoors, move away from the area where the tabun was released. Go to the highest ground possible, because tabun is heavier than air and will sink to low-lying areas.
    - If the tabun release was indoors, get out of the building.
- If people think they may have been exposed, they should remove their clothing, rapidly wash their entire body with soap and water, and get medical care as quickly as possible.
- *Removing and disposing of clothing*:
  - Quickly take off clothing that has liquid tabun on it. Any clothing that has to be pulled over the head should be cut off the body instead of pulled over the head. If possible, seal the clothing in a plastic bag. Then seal the first plastic bag in a second plastic bag. Removing and sealing the clothing in this way will help protect people from any chemicals that might be on their clothes.
  - If clothes were placed in plastic bags, inform either the local or state health department or emergency personnel upon their arrival. Do not handle the plastic bags.
  - If helping other people remove their clothing, try to avoid touching any contaminated areas, and remove the clothing as quickly as possible.
- *Washing the body*:
  - As quickly as possible, wash any liquid tabun from the skin with large amounts of soap and water. Washing with soap and water will help protect people from any chemicals on their bodies.
  - Rinse the eyes with plain water for 10 to 15 minutes if they are burning or if vision is blurred.
- If tabun has been ingested (swallowed), do not induce vomiting or give fluids to drink.
- Seek medical attention right away. Dial 911 and explain what has happened.

How tabun exposure is treated

Treatment consists of removing tabun from the body as soon as possible and providing supportive medical care in a hospital setting. Antidotes are available for tabun. They are most useful if given as soon as possible after exposure.