

Change 1

Headquarters
Department of the Army
United States Marine Corps
United States Navy
United States Air Force
Washington, DC, 31 December 2009

Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection

1. Change Field Manual (FM) 3-11.4/Marine Corps Warfighting Publication (MCWP) 3-37.2/Navy Tactics, Techniques, and Procedures (NTTP) 3-11.27/Air Force Tactics, Techniques, and Procedures (Interservice) (AFTTP[I]) 3-2.46, 2 June 2003, as follows:

Remove old pages:
E-3 and E-4

Insert new pages:
E-3 and E-4

2. This change is based on the Edgewood Chemical Biological Center's Toxic Industrial Chemical Assessment of Nuclear, Biological, and Chemical (NBC) Filter Performance (ECBC-TR-093). It was originally thought that the protection afforded to personnel using chemical, biological, radiological, and nuclear (CBRN) filters against fuming nitric acid was "effective." However, recent reports have shown that the protection afforded to personnel using CBRN filters against fuming nitric acid is "poor."
3. A bar (|) marks new or changed material.
4. File this transmittal sheet in front of the publication.

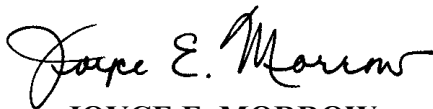
DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

31 December 2009

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:



JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
1000804

DISTRIBUTION:

Active Army, Army National Guard, and U.S. Army Reserve: To be distributed in accordance with the initial distribution number 110736, requirements for FM 3-11.4.

By Order of the Secretary of the Air Force

MAX E. KIRSCHBAUM
Colonel, USAF
Commander
Headquarters, Air Force Civil Engineer
Support Agency

Air Force Distribution: F

Marine Corps PCN: 143 000130 01

PIN: 080891-001

Table E-1. Protection Afforded by NBC Filters for Selected TIC

High Hazard	Medium Hazard	Low Hazard
ammonia - P	acetone cyanohydrin - M	allyl isothiocyanate - E
arsine - E	acrolein - P	arsenic trichloride - M
boron trichloride - E	acrylonitrile - P	bromine - P
boron trifluoride - E	allyl alcohol - M	bromine chloride - M
carbon disulfide - P	allyl amine - P	bromine pentafluoride - M
chlorine - E	allyl chlorocarbonate - M	bromine trifluoride - M
diborane - E	boron tribromide - M	carbonyl fluoride - P
ethylene oxide - P	carbon monoxide - P	chlorine pentafluoride - M
fluorine - E	carbonyl sulfide - P	chlorine trifluoride - M
formaldehyde - P	chloroacetone - M	chloroacetaldehyde - M
hydrogen bromide - E	chloroacetonitrile - M	chloroacetyl chloride - M
hydrogen chloride - E	chlorosulfonic acid - E	cyanogen - E
hydrogen cyanide - E	crotonaldehyde - M	diphenylmethane-4 diisocyanate - E
hydrogen fluoride - E	diketene - M	ethyl chloroformate - M
hydrogen sulfide - E	1,2-dimethyl hydrazine - P	ethyl chlorothioformate - E
nitric acid, fuming - P	dimethyl sulfate - E	ethylene imine - P
phosgene - E	ethylene dibromide - M	ethylphosphonothioicdichloride - E
phosphorus trichloride - E	hydrogen selenide - P	ethyl phosphonous dichloride - M
sulfur dioxide - E	iron pentacarbonyl - M	hexachlorocyclopentadiene - E
sulfuric acid - E	methanesulfonyl chloride - E	hydrogen iodide - P
tungsten hexafluoride - E	methyl bromide - P	isobutyl chloroformate - M
	methyl chloroformate - P	isopropyl chloroformite - M
	methyl chlorosilane - P	n-butyl chloroformate - M
	methyl hydrazine - M	nitric oxide - P
	methyl isocyanate - P	n-propyl chloroformate - M
	methyl mercaptan - P	isopropyl - P
	n-butyl isocyanate - M	parathion - E
	nitrogen dioxide - P	perchloromethyl mercaptan - E
	phosphine - M	sec-butyl chloroformate - M
	trichloroacetyl chloride - M	sulfuryl fluoride - P
	phosphorus oxychloride - M	tert-butyl isocyanate - M
	phosphorus pentafluoride - P	tetraethyl lead - E
	selenium hexafluoride - E	tetraethyl pyrophosphate - E
	silicon tetrafluoride - P	tetramethyl lead - M
	stibine - P	toluene 2,4-diisocyanate - E
	sulfur trioxide - M	toluene 2,6-diisocyanate - E
	sulfuryl chloride - P	
	tellurium hexafluoride - P	
	tert-octyl mercaptan - E	
	titanium tetrachloride - E	
	trifluoroacetyl chloride - P	

Legend: Filter Effective (E); Marginally (M); Poor (P).

b. The listing of the TIC (Table E-1) represents a broad range of physical and chemical properties. Chemical families consist of halides (fluoride, chloride, bromide, and iodide), cyanides, cyanates, amines, oxides of carbon and nitrogen, ketones, aldehydes, esters, phosphates, thiols, and heavy metals (lead and titanium). This information shows that about 75 percent of the chemicals have a vapor pressure above 10 mm mercury, a state at which the strength of physical adsorption is reduced more rapidly on activated carbon and is a greater concern with respect to desorption.

c. Table E-1 provides, in summary form, assessment results of the protection afforded by NBC filters to the selected TICs. The filter assessment indicated that many of the TIC could be effectively removed by the filter (effective), minimally removed by the filter (poor), or partially removed by the filter

(marginal). However, variables, such as being near the explosive and meteorological conditions, could affect the assessment. Several of the TICs were effectively removed by NBC filters; however, almost equal numbers were assessed as performing poorly (P) or marginally (M).

d. Table E-1 provides data to only support unit planning. For example, this data could be used to support risk assessments based on IPB evaluations (e.g., types of TIC found in an AOI) furnished by the intelligence officer or the staff surgeon. However, military units (except for special-purpose units like EOD or HAZMAT response teams) lack the capability to detect most TIC; the unit response to TIC incidents/accidents remains as described in Chapter II.

Note: This summary only addresses several of the TIC that represent an aerosol hazard and are produced in large quantities. There are many other TIC that present other hazards such as flammability and oxygen depletion, etc. Consult the technical references for specific information on TIC hazards, safety considerations, and other applicable emergency response guidelines.

This page intentionally left blank.

This page intentionally left blank.

