تقييم صلاحية التربة والمياه للاستخدام في المناطق الملوثة بال TNT

رسالة مقدمة من الطالب

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ASSESSMENT OF SOIL AND WATER USABILITY IN TNT POLLUTED AREAS

Submitted By

Mohamed Abd El Mageed Abd El Mageed Mohamed

B.Sc. of Agric. Sci. (Pesticides), Faculty of Agriculture, Ain Shams University, 2004

A thesis submitted in Partial Fulfillment

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Mohamed AbdElmageed

ABSTRACT

Nearly about 22 million mines and shells in Egyptian soils are buried in the area of west north coast Egypt during World War II. Most land mines contain TNT a highly explosive material. Such mines are preventing an area of 660,000feddans from development in the different activities agriculture, urbanization and tourism. At the same time there are many casualties and accidents results in deaths and handicapped persons. This work is carried out to assess the residual concentration of TNT after detonation. For doing2 different detonations (6 and 10 kg) were carried out. After detonation, soil samples were collected at different depths and different time intervals (five months). The collected samples were analyzed for its TNT concentration using High Performance Liquid Chromatography (HPLC) method.

Such decreased may be due to less no or less activity of degrading microorganism. Also, such decrease may occurred due effect of bombing.

Also,after bombing 10kg it can be seen that while degradation reached 78.19% and 75.99% for the depth 0-4 and 4-20 respectively it decreased to 67.39% at the depth 20-45cm.

Key words: mines, Egyptian soils, TNT, explosive material, HPLC, degradation.

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ABBREVIATION

A	
ATSDR	Agency for Toxic Substances and Disease Registry
Am-DNT	Aminodinitrotoluene
B	
BCF	Bioconcentration Factor
BIP	Blow-in-Place
C	
CCW	Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects
D	
DNX	1,3-dinitroso-nitro-1,3,5-triazinane
DMM	Discarded Military Munitions
DANT	Diaminonitrotoluene
DNT	Dinitrotoluene
E	
ERW	explosive remnants of war
H	
HMX	High Melting Explosive (or octahydro-1,3,5,7- tetranitro-1,3,5,7-tetrazocine)
I	
ICRC	International Committee of the Red Cross
IMAS	International Mine Action Standards
L	
LAP	load, assemble, and pack
LC-MS	liquid chromatography-mass spectrometry
LOEC	lowest observed effective concentration
M	
MNX	1-nitroso-3,5-dinitro-1,3,5-triazinane

N

NB	nitrobenzene
NFESC	Naval Facilities Engineering Service Center
NOEC	no observed effective concentration

O

OB	open burning
OD	open detonation

P

PETN	Pentaerythritoltetranitrate
PTFE	Polytetrafluoroethylene

R

RDX	1,3,5-trinitro-1,3,5-triazinane

S

SSSA	Soil Science Society of America

T

TNT	2,4,6-trinitrotoluene
TNX	1,3,5-trinitroso-1,3,5-triazinane
TWA	Time-weighted average
TAT	Triaminotoluene

U

USAEC	U.S. Army Environmental Center
UXO	Unexploded ordnance
USAMC	U.S. Army Material Command
USEPA	U.S. Environmental Protection Agency

V

VOC	volatile organic compound

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