

STUDY ON DISEASES RELATED TO TOXIC CHEMICAL /DIOXIN ON VIETNAMESE VETERANS

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Introduction

During the war in Vietnam, the use of herbicides/dioxin by American army had caused negative effects to human health and environment. Many literatures have showed that dioxin might cause congenital deformities, cancer, blood diseases and so on. The American Science Institute has certified certain diseases related to dioxin, 4 out of which are surely evidence certified concern to dioxin (sarcoma, non-hodgkin lymphoma, hodgkin lymphoma and chloracne) and 7 of which are considered to have evidence concern to dioxin (lung cancer, larynx cancer, cancer of prostate gland, myeloma, spina bifida, porphyria cutanea tarda, peripheral nervous disorder and diabetes). Apart from this, recent researches have indicated that herbicides/dioxin also has relations to some diseases of respiratory system, immune system, cutaneous, genetic,...Therefore, the list of diseases related to toxic chemical/dioxin should be further added.

The aim of the study is as following:

- Identify ratio and mechanism of diseases related to toxic chemical/dioxin (American Science Institute) on Vietnamese exposed veterans.
- Propose list of diseases related to toxic chemical/dioxin.

Materials and Methods

1. Subjects: 47,893 veterans aged from 47 to 65, living at 8 provinces/cities in Vietnam (Hoabinh, Thainguyen, Quangtri, Binhdin, Daclac, Binhduong and Cantho), participated in war in the South of Vietnam from 1962 to 1975 have been as volunteers in our study. The study was conducted from 1994 to 2004.
2. Methods:
 - Cross sectional study
 - Individual interviews with a set of questionnaire
 - Clinical and preclinical examinations
 - Data processing with EPI-INFOR 6.04 and SPSS 12.0

Results and Discussion

Investigation of 47,893 veterans in eight provinces has detected 9 out of 11 diseases that have been identified by American Science to be related to toxic chemical/dioxin exposures. This diseases includes diabetes (7,64%), lung cancer (1,3%), Hodgkin Lymphoma (0,20%), non Hodgkin Lymphoma (0,49%), Sarcoma (0,19%), peripheral nervous disorder (0,09%) and cancer of prostate gland (0,57%).

Additionally, rare incidents of diseases such chloracne, 3 cases of malignant multiple myeloma have been found.

The prevalence of diseases in exposed group is significantly higher than non-exposed group ($p < 0,01$). No differences were found between directly exposed group and indirectly exposed group.

The two diseases which are proposed to the list of diseases related to chemical/dioxin are liver cancer and mental disorder.

Table 1. Ratio of diseases related to toxic chemical/dioxin in exposed and non-exposed veterans

<i>List of related diseases</i>	<i>Case of exposed (n=28.817)</i>		<i>Non exposed (n=19.076)</i>		<i>p</i>
	<i>Quantity</i>	<i>Ratio (%)</i>	<i>Quantity</i>	<i>Ratio (%)</i>	
<i>Sarcoma</i>	54	0,19	5	0,03	< 0,01
<i>Hodgkin Lymphoma</i>	58	0,20	3	0,02	< 0,01
<i>Non - Hodgkin Lymphoma</i>	142	0,49	29	0,15	< 0,01
<i>Chloracne</i>	2	0,01	-	-	-
<i>Multiple Myeloma</i>	3	0,01	1	0,005	> 0,05
<i>Porphyria Cutanea Tarda</i>	-	-	-	-	-
<i>Spina Bifida</i>	-	-	-	-	-
<i>Peripheral nervous disorder</i>	25	0,09	4	0,02	< 0,01
<i>Respiratory cancer</i>	201	0,70	67	0,35	< 0,01
<i>Lung cancer</i>	376	1,30	44	0,23	< 0,01
<i>Postate gland cancer</i>	164	0,57	37	0,19	< 0,01
<i>Diabetes</i>	2201	7,64	799	4,20	< 0,01
<i>Liver cancer</i>	267	0,93	35	0,18	< 0,01
<i>Mental disorder</i>	242	0,84	57	0,30	< 0,01

Table 2. Ratio of diseases related to toxic chemical/dioxin in exposed veterans

<i>List of related diseases</i>	<i>Direct</i> (n=7,434)		<i>Indirect</i> (n= 21,383)		<i>p</i>
	<i>Quantity</i>	<i>Ratio(%)</i>	<i>Quantity</i>	<i>Ratio (%)</i>	
<i>Sarcoma</i>	14	0,19	40	0,18	p > 0,05
<i>Hodgkin Lyphoma</i>	13	0,18	45	0,21	p > 0,05
<i>Non -Hodgkin Lymphoma</i>	33	0,44	109	0,51	p > 0,05
<i>Chloracne</i>	1	0,01	1	0,004	-
<i>Multiple Myeloma</i>	1	0,01	2	0,009	-
<i>Peripheral nervous disorder</i>	8	0,11	17	0,08	p > 0,05
<i>Respiratory cancer</i>	64	0,86	137	0,64	p < 0,05
<i>Lung cancer</i>	108	1,45	268	1,25	p > 0,05
<i>Postate gland cancer</i>	45	0,61	119	0,56	p > 0,05
<i>Diabetes</i>	579	7,79	1622	7,58	p > 0,05
<i>Liver cancer</i>	69	0,93	198	0,92	p > 0,05
<i>Mental disorder</i>	89	1,19	153	0,71	p < 0,01

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