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**COMMONWEALTH OF MASSACHUSETTS**

**AGENT ORANGE PROGRAM**

**Office of the Commissioner of Veteran's Services  
100 Cambridge Street  
Boston, MA 02202**

**"Health Survey of Massachusetts Vietnam Veterans"**

**SUMMARY**

**June, 1986**

## FOREWORD

The Commonwealth of Massachusetts Agent Orange Program, a program of the Office of the Commissioner of Veterans' Services, was provided funding by the 1983 Massachusetts Legislature for the purpose of conducting, "medical and scientific testing related to the possible health effects of Agent Orange on Massachusetts Vietnam Veterans."

In January, 1984, the Agent Orange Program, Office of the Commissioner of Veterans' Services (OCVS) was implemented to survey programmatic, medical and scientific options. The Agent Orange Program instituted the Agent Orange Medical/Scientific Advisory Board to provide technical recommendations, oversight and review of proposals and implemented medical and scientific programs and studies.

In January, 1985, the Massachusetts Agent Orange Program, in cooperation with the Massachusetts Department of Public Health published the "Mortality Among Massachusetts Vietnam Veterans, 1972-1983" written by Michael Kogan, M.A., and Richard Clapp, M.P.H., as the first step in the Commonwealth's attempt to find some answers to the complex questions surrounding the issue of Agent Orange. This mortality study provides a stable foundation for our continued ongoing efforts to provide scientific, technical, verifiable data regarding the effects of Agent Orange where none had been previously available.

The Massachusetts Agent Orange Program's "Health Survey of Massachusetts Vietnam Veterans, 1986" is the second step in our program's continuing efforts to determine the needs of Massachusetts Vietnam Veterans and their families. This survey utilized the "American Legion," or "Stellman questionnaire," with minor modifications. The survey results, contained within, are the result of over 2,000 Massachusetts Vietnam Veterans and their families, and dependents who took the time out to complete a rather detailed and complex form. Only 1,500 of the 2,000 questionnaires were included in the Massachusetts survey as they were chosen on the completedness of the questionnaire, and those filled out by Massachusetts veterans who had not been in the Vietnam theatre were excluded.

The analysis of the data collected by the Massachusetts Agent Orange Program was compiled and analyzed by Mr. Frank J. Bove, M.S., an epidemiologist and PhD candidate with Harvard University School of Public Health. We are indebted to the hard work of this young scientist.

The Massachusetts Agent Orange Program also acknowledges the leadership role of Governor Michael S. Dukakis of Massachusetts as well as that of Commissioner of Veterans' Services, John Halachis in their ongoing commitment to this program and its importance for the more than 50,000 Massachusetts Vietnam Veterans. We also acknowledge the General Court of the Commonwealth of Massachusetts, and in particular to Senator Fran Doris, Representative Thomas Vallely and former Representative Tom Lynch who took the leadership in bringing the Massachusetts Agent Orange Program into being. We would be remiss if we did not acknowledge the pioneering role of Mr. Christopher Gregory, the former Director of the Agent Orange Program in getting the program on line. We shall continue first and foremost to aggressively and independently survey and test Massachusetts Vietnam Veterans who bore the brunt of battle and will never be forgotten.

  
Joseph V. Bangert, Director  
Massachusetts Agent Orange Program

## SUMMARY

Fifteen hundred Vietnam veterans in Massachusetts completed health questionnaires in January 1985. The respondents were those who filed a claim against the \$180 million proposed out of court settlement reached by attorneys representing the seven chemical manufacturers of Agent Orange and Vietnam veterans. Although not a random sample of the more than 50,000 Massachusetts Vietnam veterans, the findings indicate a considerable amount of illness among the respondents including tumors, neurobehavioral problems, reproductive difficulties and birth defects among their offspring. These findings are consistent with the observed symptoms and disease found among those exposed to 2,4-D, 2,4,5-T and 2,3,7,8-TCDD (Dioxin) in the workplace or the environment.

## INTRODUCTION

Concern about the long-term effects of exposure to Agent Orange is widespread among Vietnam veterans in the U.S. and Australia, as well as among the citizens of Vietnam. In southern Vietnam, recent studies report a variety of persistent clinical problems including recurring bouts of headaches, depression and anxiety, asthenia, loss of libido, GI disorders and adverse reproductive outcomes. Studies of workers exposed to dioxin contaminated substances have found elevated rates of lymphomas and soft tissue sarcomas. Neurologic and liver effects have also been reported. Table 1 lists the findings of some of these occupational studies. Table 2 lists the findings of a Massachusetts Departments of Public Health and Veterans Services study of mortality among Vietnam veterans. This study found elevated rates of soft tissue sarcomas, kidney cancer, motor vehicle accidents and suicides. Table 3 lists findings from other studies of Vietnam veterans.

This survey of the health of Massachusetts Vietnam veterans is part of an on-going research program that was sparked by the findings of previous studies as well as the concerns raised by veterans. The results of this survey are consistent with those in the studies mentioned above.

## METHODS AND SUBJECTS

In January, 1985, The Massachusetts Agent Orange Program instituted a large-scale media campaign to alert Vietnam veterans

of the court-imposed deadline for filing a claim against the proposed \$180 million settlement reached by attorneys for the seven manufacturers of Agent Orange and Vietnam veterans. About 2,000 veterans filed claims during a two day period at the state's Office of Veterans Services. The American Legion health questionnaire was distributed to those filing claims. In addition, some 300 questionnaires were mailed to veterans who phoned the Agent Orange Program requesting to participate in the health survey. Approximately 1800 questionnaires were returned to the Agent Orange Program. fifteen hundred of these were selected based on the criteria of completedness and actual service in Vietnam.

Staff of the Agent Orange Program as well as trained volunteers, all of whom were Vietnam veterans, assisted respondents with any questions or difficulties they encountered with the questionnaire. Concerning the birth outcome data requested by the questionnaire, if the veterans were not sure of the information being asked, they were provided with a self-addressed envelope and permitted to take the questionnaire home to consult with their spouses.

## RESULTS

Analysis of the questionnaire data was performed using DBASE III. Over a quarter of the respondents stated that they were diagnosed with tumors (cancerous, benign, fatty or other). Nine were diagnosed with Hodgkins Disease. Nearly 22% of the respondents indicated that one or more of their children had birth defects. Out of 1907 live births reported in the questionnaires, 462 (24%) had at least one birth defect and 160 had more than one defect. Thirty-seven spina bifida, other brain or spine defects were reported. Table 4 presents the data on other congenital malformations.

Nearly one-third of the respondents indicated a decrease in libido and 22% reported fertility difficulties (see Table 4). Nearly two-thirds of the respondents indicated persistent problems with tiredness, over half reported persistent headaches and difficulties with memory or concentration, and almost half reported nervous disorders (see Table 5).

Seventy-three percent of the respondents answered yes to the question: "Have you or your family ever noticed a personality change?". Eighty-two percent of the respondents claimed they regularly had at least one of the following problems: depression, violent rage, anxiety and irritability. Most had more than one problem. Two hundred and seventy-five respondents reported suffering from mental illness or a breakdown. Symptoms of peripheral neuropathy in the lower or upper extremities were reported in over two-thirds of the veterans. Indications of asthenia were found in over half of the questionnaires (see Table 5).

Many respondents reported GI disorders. Over a third stated they had repeated nausea without flu or other sickness. Over 25% reported repeated bouts with diarrhea. One-third indicated that they regularly experienced loss of appetite and 20% reported weight loss.

#### CONCLUSION

We reemphasize that the questionnaires were not randomly distributed and were completed on a volunteer basis by a self-selected group of MA veterans. This means that we cannot base a valid, scientific study on the information contained in these questionnaires. However, the questionnaires clearly indicate considerable disease and suffering among a relatively young group of people (93% under age 45, 80% under age 40). The symptoms and disease found are consistent with findings from other studies of people exposed to dioxin, 2,4-D and 2,4,5-T.

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TABLE 1

REPORTED OCCUPATIONAL EXPOSURES TO DIOXIN-CONTAMINATED  
SUBSTANCES RESULTING IN HUMAN ILLNESS\*

<u>Year, place &amp; chemical(s)</u>	<u>Type of exposure &amp; number of cases</u>	<u>Neurological effects</u>	<u>Other effects</u>	<u>References</u>
1949 W.VA TCP, 2,4,5-T	explosion 117 production 111	nervousness, irritability, insomnia, personality change, de- pression, headache, pain & weakness in lower extremi- ties, peripheral neuropathy	fatigue, weight loss, weakness, decreased libido, im- potence	[Ashe & Suskind, 1949, 1950; Suskind, 1953; Suskind, 1977]
1949 Germany TCP	production, industrial lab 17	pain & weak- ness, paresthe- sia, polyneuri- tis in lower extremities	fatigue, decreased libido, impotence	[Baader & Bauer, 1951]
1952 Germany TCP	production 31	pain & weak- ness, paresthe- sia in lower extremities, memory & con- centration de- ficits, sleep disturbances, apathy, dulled emotional re- sponse	fatigue, myocardial damage	[Sus- kind, 1977]
1953 Germany TCP	explosion 55	hearing im- pairment, peripheral neuropathy	fatigue, drowsiness, myocardial damage	[Gold- man, 1973]
1956 France TCP	production 17	peripheral neuropathy		[Dugois, et.al., 1956]
1964 USSR TCP 2,4,5-T	production 128	headache, me- mory loss, sleeplessness	fatigue, joint pain	[Tele- gina & Bikbu- latova, 1970]

TABLE 1 (continued)

<u>Year, place &amp; chemical(s)</u>	<u>Type of exposure &amp; number of cases</u>	<u>Neurological effects</u>	<u>Other effects</u>	<u>References</u>
1965-68 Czechoslovakia TCP 2,4,5-T	production 80	pain & weakness in lower extremities, somnolence, headache, insomnia, peripheral neuropathy, emotional & psychiatric disorders	fatigue, weight loss	[Pazderova-Vejlupkov, et.al., 1980; 1981]
1969 NJ TCP 2,4,5-T 2,4-D	production 73	weakness in lower extremities, hypomania		[Poland, et.al. 1971]

\*adapted from Moses, et.al., 1984

TABLE 2

Standardized Proportional Mortality Ratios for Selected Causes of Death for Vietnam Veterans Compared with Either Non-Vietnam-Veterans or Non-Veteran Males

ICD NO*	CAUSE OF DEATH	OBSERVED VIETNAM VETERAN DEATHS	COMPARISON GROUP			
			NON-VIETNAM VETERANS		NON-VETERAN MALES	
			PMR	95% C.I.	PMR	95% C.I.
	All Causes	840				
140-239	All Neoplasms	129	95	(78,115)	112	(94,134)
153-154	Colo-Rectal	8	113	(56,228)	85	(42,172)
162	Lung, Bronchus	25	98	(66,146)	102	(72,145)
171	Connective Tissue	9	880	(513,1510)	473	(262,855)
189	Kidney	9	183	(96,348)	353	(191,651)
390-429 439-459	Circulatory System (except Cerebrovas- cular)	139	88	(75,103)	87	(74,102)
430-438	Cerebrovascular Disease	28	111	(77,160)	138	(96,199)
571	Cirrhosis of the Liver	29	94	(65,136)	90	(61,132)
E800-E999	All external causes	428	108	(98,119)	113	(103,124)
E810-E825	Motor vehicle acci- dents	169	110	(95,127)	127	(106,152)
E950-E958	Recorded suicides	102	93	(77,112)	118	(98,143)
799.9, E850-E869, E950-E958, E980-E982	Estimated suicides**	163	113	(96,132)	140	(120,163)
E960-E969	Homicides	31	80	(56,114)	66	(46,94)

\*International Classification of Diseases, 9th Revision, code number.  
 \*\*See reference (6) for discussion of this category. Note that there were 13 deaths in the category 799.9.

TABLE 3

## REPORTS ON THE HEALTH STATUS OF VIETNAM VETERANS

<u>Reference</u>	<u>Exposed</u>	<u>Health Effects</u>
Stellman & Stellman, 1980	Vietnam Veterans 535	congenital malformations, GI disturbances, pain in joints, sleep and psycho- logical disturbances
Barr, 1982; 1983	Vietnam Veterans Australia, 120	peripheral neuropathy, insomnia, depression, irritability, lassitude, memory loss, headaches, attempted suicides
Erickson, et.al. 1984	Vietnam Veterans 696	congenital malformations: spina bifida, cleft lip, impaired hearing, clubfoot

TABLE 4

## CONGENITAL MALFORMATIONS

<u>Birth Defect</u>	<u>Total Number</u>	<u>Prevalence *</u>	<u>BDMP Incidence Rate *</u>
Spina Bifida, other brain or spine defects	37	195	18.4
clubfoot	24	126	24.5
cleft lip/palate	17	89	13.4
missing, deformed or extra toes/fingers	31	163	27.2**
Down's Syndrome	11	58	7.9
hip abnormalities	21	111	27.0
heart defect	60		
defect of the digestive system	35		
hearing disorders	63		
cerebral palsy	6		
other skeletal defects	46		
Condition requiring special education or care	122		

\* per 10,000 live births

\*\* polydactyly and syndactyly

## OTHER REPRODUCTIVE PROBLEMS

<u>Problem</u>	<u>Number</u>	<u>%</u>
Loss of libido	487	32.4%
Infertility	330	22.0%
Infertility and saw physician	246	16.4%
low birth weight children (under 5.5 lbs.)	162	8.1%

TABLE 5

## NEUROBEHAVIORAL DYSFUNCTION

<u>Problem</u>	<u>Number</u>	<u>%</u>
persistent tiredness (saw physician)	957 270	63.7% 18.0%
persistent headaches (saw physician)	773 338	51.5% 22.5%
nervous disorders (saw physician)	684 356	45.5% 23.7%
difficulty with memory or concentration (saw physician)	786 165	52.3% 11.0%
mental illness or breakdown (receiving some disability)	275 132	18.3% 8.8%
regularly depressed, get into a violent rage, anxious or irritable (more than one behavioral problem)	1233 1015	82.1% 67.6%
Sensory symptoms of early stage peripheral neuropathy	321	21.4%
asthenia (need hands to rise from chair, can't climb stairs without holding onto railing, unable to do tasks requiring holding arms at shoulder level, difficulty grasping tools)	775	51.6%