ASSESSMENT THE ENVIRONMENT OF AREA UNDER SPREAD TOXIC CHEMICALS AFTER WAR IN M'DRAK DISTRICT, DAK LAK PROVINCES AND SUGGESTIONS SOLUTIONS

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Abstract

According to documents of the UB 10-80: The toxic chemicals of luminescent, American spread in Tay Nguyen accounts for 9% of total U.S. toxic chemicals spread in southern Vietnam. The toxic chemicals war has left heavy consequences of human health and devastating natural environment, the influence of the source in soil, water, eco-system resources, crops, livestock and produce farm forestry sector. Many regions the original stone road leading to the risk of complete inability to cultivation agriculture-forestry. Impact destruction of toxic chemicals to vegetation can see than the other living systems: approval be disrupted forest, forest ecosystem is changing rapidly create the conditions for the first tree species such as bamboo and more (Bambusaceae), the species of wood ua am mọc fast. Area of land, forest and was first replaced forest before birth, so that many living species (plants, wildlife, animal husbandry) can not appear again (UB 10-80, 1993). This article presented results assessment of environment of M'drak district, especially pollution problems Dioxin after the war.

1. Introduction

M'drak is poor district of Dal Lak province and is one of two districts (Krong Bong and M'Drak) spread toxic chemicals serious in Dak Lak province. According to documents of the UB 10-80: The toxic chemicals of luminescent, American spread in Tay Nguyen accounts for 9% of total U.S. toxic chemicals spread in southern Vietnam. The toxic chemicals war has left heavy consequences of human health and devastating natural environment, the influence of the source in soil, water, eco-system resources, crops, livestock and produce farm forestry sector. Many regions the original stone road leading to the risk of complete inability to cultivation agriculture-forestry. Impact destruction of toxic chemicals to vegetation can see than the other living systems: approval be disrupted forest, forest ecosystem is changing rapidly create the conditions for the first tree species such as bamboo and more (Bambusaceae), the species of wood ua am mọc fast. Area of land, forest and was first replaced forest before birth, so that many living species (plants, wildlife, animal husbandry) can not appear again (UB 10-80, 1993).

- Number of victims affected by chemical poisons many: According to statistics by the Department of Invalids - Social Dak Lak province, the province now has 6,426 victims are entitled toxic chemicals policies. This special rate is the number of households have more victims more other areas.

Therefore, assessing the general environment in the district M'drak determine the degree of influence toxic chemicals to the health, agricultural production by district forestry M'Drak to determine the use, to overcome logistical is a requirement of immediate reality.

2. Materials and methods

2.1 Select location samples

Besides samples of the total we get focused on the position in "hot points" of the full balance of poison chemical war, the following basis: 1) Based on documents of the Committee of UB 10 - 80, 1993: United States of the region of spray influenza; 2)Based on a survey, direct interviews of local people in the area of research, 3) The observations in the field such as carpet plants, vestiges of the activities related to spray poison rải chemical is again,

Based on the principles we choose the sampling location as follows: 1) Cu MTa Commune : Soil surface the airport *(1A); Soil base the airport(1B)*; Soil rice model *(1C); 2)* Cu KRóa commune: soild before the

People's committee (*2A); soil of model (hamlet number eight - 2B; 3)* Ea Trang commune: Phuong Hoang mountain pass*(3A);* M'Đrak mountain pass *(3B); the model rice of Lia hamlet (3C);4)* K Rông Á commune: soild before the People's committee (*4A);* Model rice and maize (*4B); 5)*Krông Jing commune:Bridge number 27 on Road 26 *(5A)*; Model rice and maize *(Hoang Hamlet - 5B).*

2.2 The samples: Position Training samples: selected for in natural institution; Sample was taken from bed to bed face meat; Sample volume from 1.5 Kg /sample.

2.3 Storage form: Soil samples are stored in a fresh PE at room temperature.

2.4 Methods of analysis Dioxin:

Methods of analysis method GC / MS, 45TQSB01 standards: 2007 (US. EPA8280A). Dioxin in soil samples are analyzed at the center Tropical Vietnamese Russia, address: Nguyen Van Huyen, Nghia Do, Cau Giay, Hanoi.

3. Results and discussion

3.2 To assessment of pollution by dioxin in M'drak district

So far, to assess the level of pollution in soil Dioxin in Vietnam are no standard April. Committee UB10 - 80 only make the threshold in the region how to fold the process to all areas for growth Dioxin in the war as background before warehouse, mud from warehouse.

In threshold and regulations as follows: 1)Land base warehouse storage poison chemical war has functions of Dioxin from 1.000ppt fold up to the region how to process all; 2) Mud have function of Dioxin from 100ppt to fold up the area way to process destroys; 3) In Europe, function of Dioxin in soil by the impact of industrial pollution sources are not allowed to exceed 10ppt.

-The majority of scientists are that: Dioxin in function of natural land is extremely small, especially not detect drugs 2,3,7,8 - TCDD in natural land.

To evaluate, we rely on two criteria: 1) Norm-first: the function of 2,3,7,8 TCDD (contract with the unique toxicity in 17 of the contract Dioxin); 2) Norm-second WHO-TEQ (total in the level equivalent to the 2,3,7,8 TCDD).

Table 1: Results of sample analysis in Cu Kroa Commune

No	Matter analysis	WHO-TEF (1998)	Sample 2A			Sample 2B		
			Concentration (pg/g = ppt) (follows natural dry weight)					
			Per matter	WHO - TEQ		Per matter	WHO - TEQ	
				Lower-bound	upper-bound		Lower-bound	upper-bound
1	**2,3,7,8 – TCDD**	**1**	**1,3**	**1,3**	**1,3**	**1,1**	**0**	1,1
2	1,2,3,7,8 – PeCDD	1	<1,3	0	1,3	<1,1	0	1,1
3	1,2,3,4,7,8 –HxCDD	0,1	<2,2	0	0,22	<0,6	0	0,06
4	1,2,3,6,7,8 –HxCDD	0,1	<1,8	0	0,18	<1,5	0	0,15
5	1,2,3,7,8,9–HxCDD	0,1	<1,3	0	0,13	3,4	0,34	0,34
6	1,2,3,4,6,7,8 - HpCDD	0,01	<3,6	0	0,036	<3,9	0	0,039
7	OCDD	0,0001	95,7	0.01	0,01	50,3	0.005	0,005
8	2,3,7,8-TCDF	0,1	<1	0	0,1	<0,3	0	0,03
9	1,2,3,7,8-PeCDF	0,05	<0,5	0	0,025	<0,7	0	0,035
10	2,3,4,7,8-PeCDF	0,5	<0,5	0	0,25	<0,6	0	0,3
11	1,2,3,4,7,8-HxCDF	0,1	<0,9	0	0,09	<2,0	0	0,2
12	1,2,3,6,7,8-HxCDF	0,1	<0,9	0	0,09	<1,0	0	0,1
13	1,2,3,7,8,9-HxCDF	0,1	<1,7	0	0,17	<2,1	0	0,21
14	2,3,4,6,7,8-HxCDF	0,1	<1,6	0	0,16	<1,2	0	0,012
15	2,3,4,6,7,8-HpCDF	0,01	<1,7	0	0,017	<1,7	0	0,017
16	1,2,3,4,7,8,9-HpCDF	0,01	<2	0	0,02	<2,3	0	0,023
17	OCDF	0,0001	<1,5	0	0,0001	<3,1	0	0,003
Total toxic WHO - TEQ				**1,31**	**4,0**		**0,345**	**3,829**
Rate % 2,3,7,8 TCDD/WHO-TEQ				89	41,3		0	28,7

Table 2: Results of sample analysis in Ea Trang Commune

No	Matter analysis	WHO-TEF (1998)	Sample signed the form 3A			Sample signed the form 3B		
			Concentration (pg/g = ppt) (follows natural dry weight)					
			Per matter	WHO - TEQ		Per matter	WHO - TEQ	
				Lower-bound	upper-bound		Lower-bound	upper-bound
1	**2,3,7,8 – TCDD**	**1**	**2,8**	**2,8**	**2,8**	**2,1**	**2,1**	**2,1**
2	1,2,3,7,8 – PeCDD	1	<2	0	2	<0,6	0	0,6
3	1,2,3,4,7,8 –HxCDD	0,1	<2	0	0,2	<0,9	0	0,9
4	1,2,3,6,7,8 –HxCDD	0,1	<3	0	0,3	#4,4	0	0,44
5	1,2,3,7,8,9–HxCDD	0,1	<2,4	0	0,24	#3,2	0	0,32
6	1,2,3,4,6,7,8 - HpCDD	0,01	37,6	0,376	0,376	13,6	0,136	0,136
7	OCDD	0,0001	551	0.055	0,055	458,7	0.046	0,046
8	2,3,7,8-TCDF	0,1	<1,5	0	0,15	<0,6	0	0,06
9	1,2,3,7,8-PeCDF	0,05	<1,3	0	0,065	<0,6	0	0,03
10	2,3,4,7,8-PeCDF	0,5	<1,1	0	0,55	<0,6	0	0,3
11	1,2,3,4,7,8-HxCDF	0,1	<1,8	0	0,18	<1,1	0	0,11
12	1,2,3,6,7,8-HxCDF	0,1	2,3	0,23	0,23	<1,4	0	0,14
13	1,2,3,7,8,9-HxCDF	0,1	<2,4	0	0,24	<1,0	0	0,1
14	2,3,4,6,7,8-HxCDF	0,1	<1	0	0,1	<1,6	0	0,16
15	2,3,4,6,7,8-HpCDF	0,01	10,7	0,107	0,107	<1,8	0	0,018
16	1,2,3,4,7,8,9-HpCDF	0,01	<3	0	0,03	<1,7	0	0,017
17	OCDF	0,0001	<4,7	0	0,001	<4,8	0	0,001
Total toxic WHO - TEQ				**3,57**	**7,6**		**2,282**	**4,668**
Rate % 2,3,7,8 TCDD/WHO-TEQ				78,5	36,7		90,0	45,0

Table 3. Results of sample analysis at model rice in Lia hamlet in Ea Trang Commune (3C)

No	Matter analysis	WHO-TEF (1998)	Concentraition (pg/g = ppt) (natural dry weight)		
			Per matter	WHO - TEQ	
				Lowerbound	upperbound
1	**2,3,7,8 – TCDD**	**1**	**#1,0**	**0**	**1,0**
2	1,2,3,7,8 – PeCDD	1	<0,6	0	0,6
3	1,2,3,4,7,8 –HxCDD	0,1	<0,8	0	0,08
4	1,2,3,6,7,8 –HxCDD	0,1	#3,3	0	0,33
5	1,2,3,7,8,9–HxCDD	0,1	<2,0	0	0,2
6	1,2,3,4,6,7,8 –HpCDD	0,01	20,1	0,201	0,0201
7	OCDD	0,0001	463,5	0,046	0,046
8	2,3,7,8-TCDF	0,1	<0,3	0	0,03
9	1,2,3,7,8-PeCDF	0,05	<1,1	0	0,055
10	2,3,4,7,8-PeCDF	0,5	<0,7	0	0,35
11	1,2,3,4,7,8-HxCDF	0,1	<0,8	0	0,08
12	1,2,3,6,7,8-HxCDF	0,1	<1,2	0	0,12
13	1,2,3,7,8,9-HxCDF	0,1	<1,1	0	0,11
14	2,3,4,6,7,8-HxCDF	0,1	<1,1	0	0,11
15	2,3,4,6,7,8-HpCDF	0,01	<2,3	0	0,023
16	1,2,3,4,7,8,9-HpCDF	0,01	<3,1	0	0,031
17	OCDF	0,0001	<5,9	0	0,001
Total toxic WHO - TEQ				**0,247**	**3,367**
Rate % 2,3,7,8 TCDD/WHO-TEQ				0	29,7

Table 4. Results of sample analysis at CuMta Commune

No	Matter analysis	WHO-TEF (1998)	Sample signed the form 1A			Sample 1B		
			Concentration (pg/g = ppt) (follows natural dry weight)					
			Per matter	WHO - TEQ		Per matter	WHO - TEQ	
				Lower-bound	upper-bound		Lower-bound	upper-bound
1	**2,3,7,8 – TCDD**	**1**	**3,3**	**3,3**	**3,3**	**#0,7**	**0**	**0,7**
2	1,2,3,7,8 – PeCDD	1	<2	0	2,0	<1,0	0	1,0
3	1,2,3,4,7,8 –HxCDD	0,1	<3	0	0,3	<1,7	0	0,17
4	1,2,3,6,7,8 –HxCDD	0,1	<3	0	0,3	<2,0	0	0,2
5	1,2,3,7,8,9–HxCDD	0,1	<2,3	0	0,23	<1,8	0	0,18
6	1,2,3,4,6,7,8 - HpCDD	0,01	20,2	0,202	0,202	12,1	0,121	0,121
7	OCDD	0,0001	1.505	0.15	0,15	462,4	0.046	0,046
8	2,3,7,8-TCDF	0,1	<1,5	0	0,15	<0,3	0	0,03
9	1,2,3,7,8-PeCDF	0,05	<1,6	0	0,08	<0,4	0	0,02
10	2,3,4,7,8-PeCDF	0,5	<1,1	0	0,55	<0,4	0	0,2
11	1,2,3,4,7,8-HxCDF	0,1	<3,0	0	0,3	<1,1	0	0,11
12	1,2,3,6,7,8-HxCDF	0,1	<2,8	0	0,28	<0,9	0	0,09
13	1,2,3,7,8,9-HxCDF	0,1	<3,0	0	0,3	<0,6	0	0,06
14	2,3,4,6,7,8-HxCDF	0,1	<1,9	0	0,19	<1,2	0	0,12
15	2,3,4,6,7,8-HpCDF	0,01	4,3	0,043	0,043	<3,3	0,033	0,033
16	1,2,3,4,7,8,9-HpCDF	0,01	<3,1	0	0,031	<2,0	0	0,02
17	OCDF	0,0001	<8,0	0	0,001	<5,2	0	0,001
Total toxic WHO - TEQ				**3,7**	**8,4**		**0,20**	**3,101**
Rate % 2,3,7,8 TCDD/WHO-TEQ				89,2	41,3		0	22,6

Bảng 5. Results of sample analysis at rice model of CuMta Commune (signed the form1C)

No	Matter analysis	WHO-TEF (1998)	Concentration (pg/g = ppt) (Follows natural dry weight)		
			Per matter	WHO - TEQ	
				Lowerbound	upperbound
1	**2,3,7,8 – TCDD**	**1**	**1,8**	**1,8**	**1,8**
2	1,2,3,7,8 – PeCDD	1	<1,3	0	1,3
3	1,2,3,4,7,8 –HxCDD	0,1	<1,6	0	0,16
4	1,2,3,6,7,8 –HxCDD	0,1	<1,79	0	0,19
5	1,2,3,7,8,9–HxCDD	0,1	#3,3	0	0,33
6	1,2,3,4,6,7,8 –HpCDD	0,01	10,3	0,103	0,103
7	OCDD	0,0001	221,3	0.022	0,022
8	2,3,7,8-TCDF	0,1	<0,7	0	0,07
9	1,2,3,7,8-PeCDF	0,05	<0,7	0	0,035
10	2,3,4,7,8-PeCDF	0,5	<0,9	0	0,45
11	1,2,3,4,7,8-HxCDF	0,1	<0,7	0	0,07
12	1,2,3,6,7,8-HxCDF	0,1	<1,3	0	0,13
13	1,2,3,7,8,9-HxCDF	0,1	<1,0	0	0,1
14	2,3,4,6,7,8-HxCDF	0,1	<1,5	0	0,15
15	2,3,4,6,7,8-HpCDF	0,01	<2,1	0	0,021
16	1,2,3,4,7,8,9-HpCDF	0,01	<3,5	0	0,035
17	OCDF	0,0001	<5,8	0	0,001
Total toxic WHO - TEQ				**1,925**	**4,967**

Table 6. Results of sample analysis at Krong A commune

No	Matter analysis	WHO-TEF (1998)	Sample signed the form 4A			Sample 4B		
			Concentration (pg/g = ppt) (follows natural dry weight)					
			Per matter	WHO - TEQ		Per matter	WHO - TEQ	
				Lower-bound	upper-bound		Lower-bound	upper-bound
1	**2,3,7,8 – TCDD**	**1**	**2,9**	**2,9**	**2,9**	**1,2**	**1,2**	**1,2**
2	1,2,3,7,8 – PeCDD	1	<0,8	0	0,8	<1,0	0	1,0
3	1,2,3,4,7,8 –HxCDD	0,1	<2,7	0	0,27	<1,4	0	0,14
4	1,2,3,6,7,8 –HxCDD	0,1	<3	0	0,3	<1,7	0	0,17
5	1,2,3,7,8,9–HxCDD	0,1	2,7	0,27	0,27	<2,4	0	0,24
6	1,2,3,4,6,7,8 - HpCDD	0,01	4,4	0,044	0,044	10,7	0,0107	0,107
7	OCDD	0,0001	171	0.017	0,017	243,1	0.024	0,024
8	2,3,7,8-TCDF	0,1	<1	0	0,1	<0,6	0	0,06
9	1,2,3,7,8-PeCDF	0,05	<0,6	0	0,03	<1,0	0	0,05
10	2,3,4,7,8-PeCDF	0,5	<0,8	0	0,4	<0,8	0	0,4
11	1,2,3,4,7,8-HxCDF	0,1	<1,1	0	0,11	<0,8	0	0,08
12	1,2,3,6,7,8-HxCDF	0,1	<0,6	0	0,06	<0,6	0	0,06
13	1,2,3,7,8,9-HxCDF	0,1	<1	0	0,1	<0,8	0	0,08
14	2,3,4,6,7,8-HxCDF	0,1	<1,2	0	0,12	<1,0	0	0,1
15	2,3,4,6,7,8-HpCDF	0,01	<2,2	0	0,022	<1,4	0	0,014
16	1,2,3,4,7,8,9-HpCDF	0,01	<2,3	0	0,023	<3,1	0	0,031
17	OCDF	0,0001	<4,5	0	0,001	<4,4	0	0,0004
Total toxic WHO - TEQ				**3,23**	**5,6**		**1,331**	**3,756**
Rate % 2,3,7,8 TCDD/WHO-TEQ				89,8	52,1		90,2	32,0

Table 7. Results of sample analysis at bridge No 27 *in K Rông Jing commune (* signed the form 5A)

No	Matter analysis	WHO-TEF (1998)	Sample signed the form 5A			Sample 5B		
			Concentration (pg/g = ppt) (follows natural dry weight)					
			Per matter	WHO - TEQ		Per matter	WHO - TEQ	
				Lower-bound	upper-bound		Lower-bound	upper-bound
1	**2,3,7,8 – TCDD**	**1**	**2,2**	**2,2**	**2,2**	**<0,4**	**0**	**0,4**
2	1,2,3,7,8 – PeCDD	1	<2	0	2	<0,5	0	0,5
3	1,2,3,4,7,8 –HxCDD	0,1	<1,6	0	0,16	<0,9	0	0,09
4	1,2,3,6,7,8 –HxCDD	0,1	3,7	0,37	0,37	<1,2	0	0,12
5	1,2,3,7,8,9–HxCDD	0,1	<2,8	0	0,28	#1,8	0	0,18
6	1,2,3,4,6,7,8 - HpCDD	0,01	35,3	0,353	0,353	<0,4	0	0,04
7	OCDD	0,0001	405	0.041	0,041	4,1	0	0,0004
8	2,3,7,8-TCDF	0,1	<1	0	0,1	<0,4	0	0,04
9	1,2,3,7,8-PeCDF	0,05	<1,1	0	0,055	<0,7	0	0,035
10	2,3,4,7,8-PeCDF	0,5	<1,2	0	0,6	<0,5	0	0,25
11	1,2,3,4,7,8-HxCDF	0,1	2	0,2	0,2	<0,7	0	0,07
12	1,2,3,6,7,8-HxCDF	0,1	<1,3	0	0,13	<0,5	0	0,05
13	1,2,3,7,8,9-HxCDF	0,1	<2	0	0,2	<0,9	0	0,09
14	2,3,4,6,7,8-HxCDF	0,1	<0,9	0	0,09	<1,5	0	0,015
15	2,3,4,6,7,8-HpCDF	0,01	7,9	0,079	0,079	3,1	0	0,031
16	1,2,3,4,7,8,9-HpCDF	0,01	<3,1	0	0,031	<3,0	0	0,03
17	OCDF	0,0001	10	0,001	0,001	<3,4	0	0,003
Total toxic WHO - TEQ				**3,24**	**6,9**		**0**	**2,077**
Rate % 2,3,7,8 TCDD/WHO-TEQ				67,9	31,9		0	19,3

Legend: WHO-TEF: multiplier in the convention in 1998 by the World Health (WHO) for humans; -WHO-TEQ: the equivalent in 2,3,7,8 - TCDD the convention in 1998 by the World Health (WHO); Signs-<: not found in the samples; following as detection limit; -WHO-TEQ Lowerbound: level equivalent in only by the find, and not found There is not exclusive with.-WHO-TEQ upperbound: equivalent levels in the maximum possible in form, and have found no equal in the detection limit

The rresults analysis sample show that:

1) Function of Dioxin (especially the 2,3,7,8-TCDD) was detected with the function of several ppt, demonstrate Dioxin in this country related to chemical toxins that war has United States used before;

2) Function of Dioxin in the sample are lower than the threshold defined the way, all for the warehouse (1.000ppt) and the mud of Vietnam (100 ppt), not breach standards of Dioxin pollution some European countries (10 ppt); Although functions of the Dioxin safe threshold for human but it has destroyed the ecological environment of the region

3) Based on the analysis results can evaluate the area of land in 5 communes in the safety threshold DOXIN. According to the documents already published, the agricultural production in the limited safe Dioxin will ensure safety.

From the evaluation of land resources, water levels and agricultural production forestry group project authors proposed the solution in order to restore the production environment Forestry agricultural districts include:

1) Solutions restore forest environment;

2)Solutions restore production environment farm forestry

3)Develop cultivation: Plant food, industrial plants short days, vegetables;

4) Building and renovating garden;

5)Development and breeding of pasture.

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