

Agent Orange/dioxin in Vietnam

Activities mainly focus on the study on overcoming the consequences on the environment and human health

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Some key events

1. October 1980, the Committee for Toxic Chemical Consequences Investigation used by the US Army during Vietnam War (The 10-80 Committee) was established
2. March, 1999, the National Steering Committee for Toxic Chemical Consequences Investigation used by the US Army during Vietnam War (The Steering Committee 33) was established
3. The Scientific Research Program 33 for the period of 2000-2005
4. The Scientific Research Program 33 for the period of 2011-2015
5. The landfill project for 94,000 m³ dioxin contaminated soil at Bien Hoa Airbase 2007
6. The landfill component for 7,000 m³ dioxin contaminated soil at Phu Cat Airbase
7. The remediation project for 70,000 m³ dioxin contaminated soil and sediment at Da Nang Airport

A number of researches on AO/dioxin impacts on the people's health

1. A number of cross researches on Epidemiology of veterans and in some small scale sprayed areas carried out by the 10-80 Committee during the period of the 80s and 90s
2. A number of researches on blood, immunity and chromosome carried out by the 10-80 Committee and some other scientific research organisations during the period of the 80s and 90s
3. Larger scale researches implemented under the Scientific Research Program 33 in the period of 2000-2005; there are closely connection among the researches on dioxin residue in the environment, clinical, subclinical, mutagenicity, immunity, etc. and dioxin quantification in the blood of some targeted objects of study

The epidemiological research results

(LB Quang, ĐH Hậu, 2005)

No.	Research content	Exposure	Comparison
1	Total veteran households	28,817	19,076
2	Households with birth defect children	1,604	356
3	Percentage of households with birth defect children	5.69%	1.87%
4	Total of children	77,816	61,043
5	No. of children with birth defect	2,296	452
6	Percentage of children with birth defect	2.95%	0.74%



Birth defect

(LB.Quang, ĐH.Hậu, 2005)

No.	Type of defect	Children and grandchildren of exposed veterans	Children and grandchildren of unexposed veterans
1	Harelips, Cleftlips	3.71	2.93
2	Eyes, faces, ears and necks	2.90	15.59
3	Musculature, skeletal system	27.45	33.31
4	Derm, Mucous membrane	12.21	14.08
5	Nervous system	11.08	16.85
6	Down syndrome	16.68	12.10
7	Multi defects	25.97	16.14

A number of mutagenicity

- Changes in genes number P53, Cyp1A1, Cyp1B1, AhR, MSH2, hOGG1, p27KIP1, and UROD have been identified in households of veterans who exposed to dioxin. These include generic changes in association with cancers
- Mutagenicity is continuously being studied; decoding the entire generic system of some of the people with high concentration of dioxin at The Institute for Generic System Research (cooperating with Japan and some of the other foreign research institutions)

Research on dioxin changes and its association with diseases

- Research on the changes in dioxin concentration in those with high dioxin concentration in blood for some consecutive years
- Observe the changes in health and illness in relationship with the changes in dioxin concentration

(Vietnam Military Medical Academy)

Research on the treatment methodology

- Some Nonspecific detoxication methods
- Sauna in combination with vitamin therapeutics
- A number of traditional herbal treatments
- Prior and post treatment Dioxin quantification
- Comparison of clinical and subclinical criteria before and after treatment
- Psychological assessment and support
- Reproductive consultancy and prenatal screening

A number of research results on AO/dioxin impacts on the environment

- Researches on the biodiversity reduction in A Luoi, Thua Thien Hue; the changes on the forestry vegetation in the heavily sprayed areas (Bach Ma, Thua Thien Hue; Ma Da, Binh Phuoc; Vietnam – Lao Border, areas in Quang Nam Province, etc.)
- An on-going research on the loss quantification to the environment due to herbicides
- Identification of dioxin residue in heavily sprayed areas, military airbases, especially Bien Hoa Airbase with around 200,000 m³ of dioxin contaminated soil and 40,000 m³ contaminated sediment to be remediated
- Research and comparison of dioxin from Agent Orange and other sources (mainly the difference of TCDD)

Study on dioxin remediation technologies

- Landfill; adopted for Bien Hoa and Phu Cat airbases
- Thermal desorption destruction; adopted for Da Nang Airport
- Bioremediation technology; having been tested in laboratory and on site
- Ball milling technology; demonstrated at Bien Hoa Airbase
- Study on the combination of different technologies

Environmental monitoring

- Monitoring of dioxin in soil and sediment in the surrounding areas of Bien Hoa Airbase
- Monitoring of dioxin in surface and groundwater at Phu Cat Airbase
- Monitoring of dioxin in soil, water and ambient air around dioxin remediation site at Da Nang Airport
- Intention to continuously conduct research dioxin residue in sediment in ponds and lakes of the heavily sprayed areas

Capacity building for dioxin researching activities

- Develop dioxin analysis laboratories (VEA, VRTC, Vietnam Academy for Military Medical)
- Train and develop young researchers
- Cooperate between analysis, researching and training institutions
- Invest in equipment for dioxin analysis and other toxic chemicals
- Promote international cooperation; exchanges of expert visits plus cross checking of analysis results

Conclusions



- The consequences of AO/dioxin in Vietnam remain serious
- Resources for researches/studies are low and scattering; most of the researches are medium or small scale
- It is necessary to focus more on complete remediation of contaminated areas in Bien Hoa Airbase; re-assess in a more comprehensive way dioxin residue in soil and sediment of all sprayed areas
- It is also required to pay more attention to prevent further spreading of contamination; monitor and provide treatment to those who are exposed to dioxin; Develop the network of reproductive consultancy and prenatal screening
- Further invest to promote POPs study and remediation
- Expand and enhance international cooperation in researching and remediating POPs