Between 1961 and 1971, the US military, in an effort to remove vegetation being used for concealment by North Vietnamese and Vietcong forces during the Vietnam War, sprayed an estimated 12 million gallons of chemical herbicides—primarily Agent Orange, which contains a toxic chemical compound called dioxin—over approximately 10% of the land surface of the former Republic of Vietnam (South Vietnam). This action was taken at the request of South Vietnam’s US-backed government, and at the time it was not seen as an aggressive act by the US and South Vietnam governments, but today it remains an area of tension between the US and Vietnam and has had significant public health impacts in Vietnam and among American veterans (Stevenson 2014).

The persistent impact of Agent Orange on health is still debated among scientists, but studies have indicated a causal relationship between dioxin exposure and a number of diseases (including cancers) in veterans. Agent Orange has been credibly linked to health consequences. This led to the creation of a vulnerability index incorporating two variables derived from 2009 Vietnam census data: percentage of the population identifying as disabled and the population in each district that fits within a vulnerable category (such as income level and pre-existing health conditions). These were added together to create an index of the percentage of the population who are women with children. Persons with disabilities also experience greater difficulty accessing health services in Vietnam and face other barriers to a healthy life, in addition to the possibility that their disabilities themselves are linked to Agent Orange (Ngo et al. 1996). Therefore, a third vulnerability factor was added: the percentage of the population identifying as disabled. These were added together to create an index of the percentage of the population in each district that fits within a vulnerable category. While not comprehensive, this index provides a reasonable approximation of vulnerability to dioxin by district.

As would be expected given that Agent Orange is an herbicide, contamination appears to be most prevalent in rural areas. Over 13 million square kilometers of cultivated land are in high-risk areas, this represents over 20% of all cropland in former South Vietnam, and raises concerns about public health and food safety in these areas.

The impact of Agent Orange on human health remains ambiguous, but assuming that research linking dioxin contamination to serious health problems is valid, the results of this study are cause for grave concern. As of 2009, over two million people live in areas found by the model to be at least somewhat high-risk, around a third of the population of former South Vietnam, which includes over 200,000 children under five. Many more outside these areas may suffer some negative health effects.