

## **INFORMATION OF THE DISSERTATION**

Dissertation's title: **RESEARCH ON TRACE ELEMENTS AND EXISTENCE OF DIOXINS IN SEDIMENTS IN THE CAN GIO MANGROVES, VIETNAM**

Major: **Geology**

Major code: **62.44.02.01**

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### **Abstract of the dissertation**

The Can Gio mangrove forest suffered many adverse impacts from the spraying of defoliants during the war and from the activities of industrial, urban and traffics of mega cities such as Ho Chi Minh City, Binh Duong and Dong Nai over the decades. So, have quality of sediments based on trace elements and dioxin concentrations in the area been polluted or affected to the environment, yet? The dissertation elucidates the sediments quality in the study area based on trace elements and dioxins detected with time and in space through the route of 13 boreholes of 100 cm and 2 boreholes of 200 cm, specifically through the following two hypotheses:

✚ Dissertation hypothesis #1: The quality of sediments based on trace element concentrations (Cd, Cr, Cu, Ni, Pb and Zn) in the study area of Can Gio mangrove forest has little variation with time and in space, meeting technical regulation of Vietnam and international standards. According to the Igeo and EF<sub>s</sub> indexes, the concentrations of Cd, Cu and Zn elements are less changed and not accumulated, while the concentrations of Cr, Ni and Pb elements are slightly accumulated in both vertical and horizontal sediments in the area.

✚ Dissertation hypothesis #2: The concentration of dioxins in the sediments does not fluctuate with time and in space according to the boreholes route. Dioxin concentrations are far under the regulatory limit of Vietnam and beneath the limits of international standards on sediment quality, are safe for organisms in the study area of Can Gio mangrove forest.

### **Contributions of the dissertation**

Assessment of sediment quality based on trace elements and dioxin is within the limits allowed by national regulation of Vietnam and international standards on sediment quality. At the same time, it was determined that trace elements and dioxin concentrations had little variation with time and in space according to the boreholes route in Can Gio mangrove forest.

Existence of dioxin was detected to be fairly stable with time and in space according to the boreholes route. Detecting anomalies of dioxin concentration at a depth of  $95 \pm 10$  cm corresponding to the period of defoliants spraying, which can be used to assess sediment accumulation for the area of Can Gio mangrove forest.

Assessing age and rate of sediment accumulation has great errors by applying radioactive isotopes  $^{210}\text{Pb}$  and  $^{137}\text{Cs}$ , which may be appropriately elucidated by using dioxin for the area of Can Gio mangrove forest.