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AN IGNORED HAZARDOUS SUBSTANCE IN CORAL REEFS: ARTIFICIAL RADIONUCLIDES**Wuhui Lin^a and Fangfang Deng^b**^aGuangxi University, China^bInstitute of Oceanography, China

Artificial radionuclides, one of most concerned hazardous materials, are widely measured in various environmental matrixes and are recognized as a significant proxy of the “Anthropocene”. Artificial radionuclides are mainly released from the nuclear power plants in the routine and accidental condition in the contemporary ocean. Recently, some coastal nuclear power plants are located near the coral reef region in Southeast Asia. Coral reefs are one of vital marine ecosystems and are characterized by high biodiversity and ecosystem services. Although marine biotas in marine ecosystem of coral reefs will receive additional radiation dose from artificial radionuclides, artificial radionuclides in the reef-building coral are rarely reported around the world. In our study, two most common artificial radionuclides, ⁹⁰Sr and ¹³⁷Cs, were simultaneously measured for the first time in the reef-building coral in the South China Sea. The activity of ¹³⁷Cs was lower than the limit of detection (0.2 Bq/kg) of the High Purified Germanium γ Spectrometry in all reef-building coral skeleton. By contrast, the activity of ⁹⁰Sr ranged from 0.97 Bq/kg to 1.58 Bq/kg with a mean value of 1.21 Bq/kg, which was significantly higher than ⁹⁰Sr activities in sediment and other biotas. Therefore, the fingerprint of ¹³⁷Cs/⁹⁰Sr activity ratio of coral skeleton (<0.17) is greatly distinct from that of other environment matrixes, such as that of seawater and sediments (1.5). The mechanism of the abnormal activities and ratio of artificial radionuclides in coral skeleton is illustrated by the “Concentration Factor-Based Skeleton Model”. Our model may also shed new light for heavy metal and trace elements in coral reefs. Artificial radionuclides in coral reefs should be paid more attention, especially for the future operation of floated nuclear reactors on the surface ocean and the coastal nuclear power plants near coral reefs.