PSI2009/393
Contamination on coral reefs waters and adjacent environments around the Ryukyu Archipelago

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In recent decades, coral reefs have begun to face many threats mainly caused by both natural and anthropogenic sources. This study assesses the current contamination status of diuron and its behavior in the coral reefs and adjacent environments around the Ryukyu Archipelago, southwestern Japan. Water and surface sediment samples were collected from rivers, and ports around Okinawa islands, including Naha Bay and Shiraho coral reefs at Ishigaki Islands between May, 2007 and February, 2008. The concentrations of diuron ranged from ND to 90.00 ng/L and 0.18 to 3.97 ng/g for water and sediments, respectively. The detection frequency was higher (82.4%, 42/51 samples) in Okinawa mainland waters compared to Ishigaki water samples (39.5%, 32/81 samples). Detection frequency of diuron at Naha Bay was comparable to Shiraho coal reefs waters (38.1%, 16/42 samples). Temporal variation results show that relatively high concentrations of diuron were detected during December (winter) in Shiraho coral reefs, while higher levels diuron were detected during September (summer) in Naha Bay. The results suggest that Okinawa mainland is contaminated with diuron from various sources such as agricultural, urban uses and shipping activities while Ishigaki Island is mainly contaminated from agricultural activities. Comparing to eco-toxicological data, our results indicate that at present the level of contamination of diuron in this region is not at an alarming stage for the health of corals. However, long term exposure studies for environmental relevance levels of diuron around coral reefs should be given a priority in future.

Number of words in abstract: 243
Keywords: contamination - coral reef - ecosystem - Ryukyu archipelago
Technical area: Ecosystems, Biodiversity and Sustainable Development
Special session: Not specified
Presentation: No preference
Special equipment: No special equipment