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## COULD KRILL MOLTING AFFECT TH-234 BASED EXPORT FLUX ESTIMATES?

Recent findings for three species of Antarctic crustaceans suggest that molting within dense krill schools may significantly affect Th-234 based particle flux assessments. To test this hypothesis, northern krill (*Meganyctiphanes norvegica*) were exposed to dissolved Th-234 radiotracer under controlled laboratory conditions (14 C; 37 PSU, darkness) and the radionuclide uptake and loss biokinetics determined using high resolution gamma spectrometry. Krill rapidly took up Th-234, reaching a steady-state concentration factor of about 300 in less than one week, and effectively retained the accumulated radionuclide until molting occurred. At 14 C krill molt on average every 8 days, and during the experiment 9 molting events were observed which indicated that ca. 50% of whole-body Th-234 activity was associated with the molted exoskeleton. Immediately following molting a corresponding amount of Th-234 was rapidly adsorbed on the newly formed cuticle. Calculations suggest that if rapid Th-234 uptake by krill is not considered in the modeling, the occurrence of a synchronized molting event within a high-biomass krill school may result in an overestimation of Th-234 based particle flux by as much as one order of magnitude.

Abstract is:

Presentation Preference: Oral

First Session Choice: SS23 Conundrums and Controversies: What Contributes to the Vertical Flux of Carbon, Nitrogen, and Phosphorus in Aquatic Ecosystems?

Second Session Choice: SS20 Advances in Biogeochemical Modeling: Bridging Physics, Chemistry, and Biology

Third Session Choice: CS06 Biogeochemistry

Other Session Choice:

Session Chair No

Extended A/V: No