The effect of ultraviolet germicidal radiation on melted snow and ice samples for the inactivation of microorganisms

Fumio Nakazawa[1, 2] and Kumiko Goto-Azuma[1, 2]
[1]*National Institute of Polar Research*
[2]*The Graduate University for Advanced Studies, SOKENDAI*

We examined an ultraviolet (UV) disinfection treatment to allow storage of the melted snow/ice samples in a refrigerator for a long time. There was a problem that some samples stored in a refrigerator rose particle concentration supposed to be caused by growth of microorganisms after approximately 1-2 weeks. In this study, surface snow obtained from the No. 31 Glacier in the Suntar-Khayata Range, eastern Siberia, Russia was used. The melted water sample was divided into two portions for the UV treatment and non-UV treatment. Particle concentrations in the samples were measured with a Coulter counter. Although temporal variation of the particle concentration in samples with the non-UV treatment showed an increasing trend, no obvious increase was observed for 53 days from the samples with the UV treatment. In addition, the original particle concentrations were not changed by the UV treatment. These findings hence indicated that UV germicidal radiation on the melted water samples is effective to the sample storage for a long time. In addition, detailed analysis for the size distribution of the particles appeared in the non-UV treated samples suggested growth and decomposition of microorganisms in the water sample with time.