XIII. Radioactive Materials

Section XIII of the 2006-2007 season plans lists the radioactive materials to be used and provides information regarding their form, nuclide, site, and specific use.

PROJECT	NUCLIDE	FORM	SITE	USE
B-002-N	^{3}H ^{35}S ^{14}C	^{3}H - Leucine ^{35}S - Methionine ^{14}C - DMSO ^{35}S - DMSP ^{14}C - DMSP	*R/V Nathaniel B. Palmer*	Impact of solar radiation and nutrients on biogeochemical cycling of DMSP and DMS in the Ross Sea
B-006-M	^{14}C ^{3}H ^{35}S ^{32}P ^{33}P	^{14}C - Alanine ^{14}C - ATP ^{14}C - Sodium bicarbonate ^{14}C - Leucine ^{3}H - Lysine ^{3}H - Uridine ^{3}H - Histidine ^{14}C - Amino acid Mix ^{35}S - Methionine ^{32}P - ATP ^{33}P - ATP	McMurdo Station	Energetics of protein metabolism during development of Antarctic echinoderms

PROJECT	NUCLIDE	FORM	SITE	USE
B-016-P/L	^{14}C	^{14}C - Sodium Bicarbonate	Palmer Station, *R/V Laurence M. Gould*	Palmer, Antarctica Long Term Ecological Research Project: Climate Migration, Ecological Response, and Teleconnections in an Ice-Dominated Environment (Phytoplankton Group)
B-045-P/L	^{3}H	^{3}H – Thymidine/Leucine	Palmer Station *R/V Laurence M. Gould*	Palmer, Antarctica Long Term Ecological Research Project: Climate Migration, Ecological Response, and Teleconnections in an Ice-Dominated Environment
B-047-M	^{14}C	^{14}C – Sodium Bicarbonate	McMurdo Station, US Coast Guard *Polar Sea*	Interannual Variability in the Antarctic Ross Sea: Nutrient Fields and Seasonal Productivity II
B-047-N	^{14}C	^{14}C – Sodium Bicarbonate	*Nathaniel B. Palmer*	Study to determine the influence of UV radiation of phytoplankton growth rates
B-050-L	^{14}C	^{14}C-Sodium Bicarbonate	*Laurence M. Gould*	Study of the influence of UV radiation on phytoplankton growth rates

PROJECT	NUCLIDE	FORM	SITE	USE
B-228-N	^{14}C ^{3}H ^{55}Fe	^{14}C-Sodium Bicarbonate ^{14}C-Leucine ^{3}H-Thymidine ^{55}Fe- Ferrous Chloride ^{14}C-Glucose	*Nathaniel B. Palmer*	Study of growth rates, metabolism, and the influence of iron availability on phytoplankton communities
B-134-M	^{35}S ^{14}C	^{35}S - Cysteine ^{14}C – Methylated proteins	McMurdo Station	Towards an understanding of protein homeostasis in cold-adapted Antarctic fish
B-195-M	^{14}C ^{35}S ^{3}H	^{14}C – Sodium Bicarbonate ^{14}C – Acetate ^{14}C – Sodium acetate ^{14}C – Methylamine ^{14}C – Methane ^{35}S – Sodium sulfate ^{3}H - Thymidine	McMurdo Station	Collaborative Research: Microbial Diversity and Function in the Permanently Ice-Covered Lakes of the McMurdo Dry Valleys, Antarctica
B-200-N	^{3}H	^{3}H - Thymidine/Leucine	*R/V Nathaniel B. Palmer*	Interactive effect of UV vertical mixing on phytoplankton and bacterial productivity of Ross Sea Phaeocystis bloom
B-203-N	^{14}C	^{14}C - Bicarbonate	*R/V Nathaniel B. Palmer*	Interactive effects of UV and vertical mixing and phytoplankton and bacteriplankton in the Ross Sea

PROJECT	NUCLIDE	FORM	SITE	USE
B-211-M	^{3}H ^{14}C	^{3}H – Leucine ^{14}C - Bicarbonate	McMurdo Station	NASA-ASTEP: Subsurface Ice and Brine Sampling: Life Detection and Characterization in the McMurdo Dry Valleys using an Ultrasonic Gopher
B-230-M	^{14}C	^{14}C - Bicarbonate	McMurdo Station	Environmental and Ecological Regulation of Differences and Interactions between Solitary and Colonial Forms of Phaeocystis Antarctica
B-272-N	^{14}C	^{14}C - Bicarbonate	*Nathaniel B. Palmer*	Study of the influence of UV radiation on phytoplankton growth rates
B-300-M	^{3}H ^{14}C	^{3}H - Thymidine ^{14}C - Sodium bicarbonate ^{14}C - Alanine	McMurdo Station	Biogeochemistry of dissolved organic material in Pony Lake, Ross Island
B-300-M	^{3}H ^{14}C	^{3}H - Thymidine ^{14}C - Sodium bicarbonate	McMurdo Station	Biogeochemistry of dissolved organic material in Pony Lake, Ross Island

PROJECT	NUCLIDE	FORM	SITE	USE
B-301-M	^{14}C ^{35}S ^{3}H ^{32}P ^{33}P	^{14}C – Bicarbonate ^{14}C – Alanine ^{14}C – Palmitic acid ^{14}C – Acetic acid ^{35}S – Methionine ^{35}S – dATP ^{3}H – Thymidine ^{3}H – Uridine ^{32}P - dATP ^{33}P – dATP	McMurdo Station	A Graduate Training Program in Antarctica: Integrative Biology and Adaptation of Antarctic Marine Organisms
B-310-M	^{3}H ^{14}C	^{3}H – Thymidine ^{14}C – Leucine	McMurdo Station	What Limits Denitrification and Bacterial Growth in Lake Bonney, Taylor Valley, Antarctica?
B-310-M	^{3}H	^{3}H - Thymidine	McMurdo Station/ Taylor Valley	What limits denitrification and bacterial growth in Lake Bonney, Taylor Valley, Antarctica
B-386-N	^{14}C	^{14}C - Sodium Bicarbonate	*R/V Nathaniel B. Palmer*	Study of the influence of UV radiation on phytoplankton growth rates
B-420-M	^{226}Ra ^{209}Po	^{226}Ra – LSC Vials ^{209}Po – Aqueous in 0.5M HCl	McMurdo Station/ Dry Valleys	McMurdo Dry Valleys LTER
B-422-M	^{14}C ^{3}H	^{14}C – Bicarbonate ^{14}C – Toluene ^{3}H – Thymidine ^{3}H – Toluene	McMurdo Station/Dry Valleys	The Role of Natural Legacy on Ecosystem Function and Structure in a Polar Desert.

PROJECT	NUCLIDE	FORM	SITE	USE
B-422-M	^{14}C ^{3}H	^{14}C – Bicarbonate ^{3}H – Thymidine	McMurdo Station/Dry Valleys	The Role of Natural Legacy on Ecosystem Function and Structure in a Polar Desert
B-423-M	^{14}C	^{14}C - Bicarbonate ^{14}C - Sucrose	McMurdo Station/ Dry Valleys	McMurdo Dry Valleys LTER
B-423-M	^{14}C	^{14}C - Sodium Bicarbonate ^{14}C – Sucrose	McMurdo Station/ Dry Valleys	McMurdo Dry Valleys LTER
O-176-M	^{241}Am	^{241}Am - Sealed source	McMurdo Station	Collaborative research: Antarctic Troposphere Chemistry Investigation (ANTCI)
O-215-N	^{63}Ni	^{63}Ni – Foil	*R/V Nathaniel B. Palmer*	ANSLOPE - Cross slope exchanges at the Antarctic Slope Front (source is inside an electron capture detector of a gas chromatograph)
O-257-S	^{63}Ni	^{63}Ni – Foil	South Pole Station	South Pole Monitoring for Climatic Change -- U.S. Department of Commerce NOAA Climate Monitoring and Diagnostic Laboratory (source is inside an electron capture detector of a gas chromatograph)

PROJECT	**NUCLIDE**	**FORM**	**SITE**	**USE**
O-398-N	^{57}Co	^{57}Co – cobalamin (Vitamin B-12)	*R/V Nathaniel B. Palmer*	Study of the influence of UV radiation and carbon dioxide concentrations in seawater on various enzymes of phytoplankton origin