

## XIII. Radioactive Materials

*Section XIII of the 2005-2006 season plans lists the radioactive materials to be used and provides information regarding their form, nuclide, site, and specific use.*

<u>PROJECT</u>	<u>NUCLIDE</u>	<u>FORM</u>	<u>SITE</u>	<u>USE</u>
B-002-N	<sup>3</sup> H <sup>35</sup> S <sup>14</sup> C	<sup>3</sup> H - Leucine <sup>35</sup> S - Methionine <sup>14</sup> C - DMSO <sup>35</sup> S - DMSP <sup>14</sup> C - DMSP	R/V <i>Nathaniel B. Palmer</i>	Impact of solar radiation and nutrients on biogeochemical cycling of DMSP and DMS in the Ross Sea
B-006-M	<sup>14</sup> C <sup>3</sup> H <sup>35</sup> S <sup>32</sup> P <sup>33</sup> P	<sup>14</sup> C - Alanine <sup>14</sup> C - ATP <sup>14</sup> C - Sodium bicarbonate <sup>14</sup> C - Leucine <sup>3</sup> H - Lysine <sup>3</sup> H - Uridine <sup>3</sup> H - Histidine <sup>14</sup> C - Amino acid Mix <sup>35</sup> S - Methionine <sup>32</sup> P - ATP <sup>33</sup> P - ATP	McMurdo Station	Energetics of protein metabolism during development of Antarctic echinoderms
B-016-P/L	<sup>14</sup> C	<sup>14</sup> C - Sodium Bicarbonate	Palmer Station, R/V <i>Laurence M. Gould</i>	Palmer, Antarctica Long Term Ecological Research Project: Climate Migration, Ecological Response, and Teleconnections in an Ice-Dominated Environment

<u>PROJECT</u>	<u>NUCLIDE</u>	<u>FORM</u>	<u>SITE</u>	<u>USE</u>
				(Phytoplankton Group)
B-045-P/L	<sup>3</sup> H	<sup>3</sup> H – Thymidine/Leucine	Palmer Station <i>R/V Laurence M. Gould</i>	Palmer, Antarctica Long Term Ecological Research Project: Climate Migration, Ecological Response, and Teleconnections in an Ice-Dominated Environment
B-047-M	<sup>14</sup> C	<sup>14</sup> C – Sodium Bicarbonate	McMurdo Station, US Coast Guard <i>Polar Star</i>	Interannual Variability in the Antarctic Ross Sea: Nutrient Fields and Seasonal Productivity II
B-047-N	<sup>14</sup> C	<sup>14</sup> C – Sodium Bicarbonate	<i>Nathaniel B. Palmer</i>	Study to determine the influence of UV radiation of phytoplankton growth rates
B-048-P	<sup>3</sup> H <sup>14</sup> C <sup>35</sup> S	<sup>3</sup> H – Leucine <sup>14</sup> C – DMSP <sup>14</sup> C – Glucose <sup>14</sup> C – Glutamic Acid <sup>14</sup> C – DMS <sup>35</sup> S – DMSP	Palmer Station	Complex molecular to global interactions and feedbacks in the marine DMS cycle.
B-050-L	<sup>14</sup> C	<sup>14</sup> C-Sodium Bicarbonate	<i>Laurence M. Gould</i>	Study of the influence of UV radiation on phytoplankton growth rates

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B-228-N	<sup>14</sup> C <sup>3</sup> H <sup>55</sup> Fe	<sup>14</sup> C-Sodium Bicarbonate <sup>14</sup> C-Leucine <sup>3</sup> H-Thymidine <sup>55</sup> Fe- Ferrous Chloride <sup>14</sup> C-Glucose	<i>Nathaniel B. Palmer</i>	Study of growth rates, metabolism, and the influence of iron availability on phytoplankton communities
B-134-M	<sup>35</sup> S <sup>14</sup> C	<sup>35</sup> S - Cysteine <sup>14</sup> C – Methylated proteins	McMurdo Station	Towards an understanding of protein homeostasis in cold-adapted Antarctic fish
B-195-M	<sup>14</sup> C <sup>35</sup> S <sup>3</sup> H	<sup>14</sup> C – Sodium Bicarbonate <sup>14</sup> C – Acetate <sup>14</sup> C – Sodium acetate <sup>14</sup> C – Methylamine <sup>14</sup> C – Methane <sup>35</sup> S – Sodium sulfate <sup>3</sup> 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	<sup>3</sup> H	<sup>3</sup> H - Thymidine/Leucine	<i>R/V Nathaniel B. Palmer</i>	Interactive effect of UV vertical mixing on phytoplankton and bacterial productivity of Ross Sea Phaeocystis bloom
B-203-N	<sup>14</sup> C	<sup>14</sup> C - Bicarbonate	<i>R/V Nathaniel B. Palmer</i>	Interactive effects of UV and vertical mixing and phytoplankton and bacterioplankton in the Ross Sea
B-211-M	<sup>3</sup> H	<sup>3</sup> H – Leucine	McMurdo Station	NASA-ASTEP:

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	<sup>14</sup> C	<sup>14</sup> C - Bicarbonate		Subsurface Ice and Brine Sampling: Life Detection and Characterization in the McMurdo Dry Valleys using an Ultrasonic Gopher
B-230-M	<sup>14</sup> C	<sup>14</sup> C - Bicarbonate	McMurdo Station	Environmental and Ecological Regulation of Differences and Interactions between Solitary and Colonial Forms of Phaeocystis Antarctica
B-272-N	<sup>14</sup> C	<sup>14</sup> C - Bicarbonate	<i>Nathaniel B. Palmer</i>	Study of the influence of UV radiation on phytoplankton growth rates
B-300-M	<sup>3</sup> H <sup>14</sup> C	<sup>3</sup> H - Thymidine <sup>14</sup> C - Sodium bicarbonate <sup>14</sup> C - Alanine	McMurdo Station	Biogeochemistry of dissolved organic material in Pony Lake, Ross Island
B-300-M	<sup>3</sup> H <sup>14</sup> C	<sup>3</sup> H - Thymidine <sup>14</sup> C - Sodium bicarbonate	McMurdo Station	Biogeochemistry of dissolved organic material in Pony Lake, Ross Island
B-301-M	<sup>14</sup> C <sup>35</sup> S <sup>3</sup> H <sup>32</sup> P <sup>33</sup> P	<sup>14</sup> C – Bicarbonate <sup>14</sup> C – Alanine <sup>14</sup> C – Palmitic acid <sup>14</sup> C – Acetic acid <sup>35</sup> S – Methionine	McMurdo Station	A Graduate Training Program in Antarctica: Integrative Biology and Adaptation of Antarctic Marine

<u>PROJECT</u>	<u>NUCLIDE</u>	<u>FORM</u>	<u>SITE</u>	<u>USE</u>
		<sup>35</sup> S – dATP <sup>3</sup> H – Thymidine <sup>3</sup> H – Uridine <sup>32</sup> P - dATP <sup>33</sup> P – dATP		Organisms
B-310-M	<sup>3</sup> H <sup>14</sup> C	<sup>3</sup> H – Thymidine <sup>14</sup> C – Leucine	McMurdo Station	What Limits Denitrification and Bacterial Growth in Lake Bonney, Taylor Valley, Antarctica?
B-310-M	<sup>3</sup> H	<sup>3</sup> H - Thymidine	McMurdo Station/ Taylor Valley	What limits denitrification and bacterial growth in Lake Bonney, Taylor Valley, Antarctica
B-420-M	<sup>226</sup> Ra <sup>209</sup> Po	<sup>226</sup> Ra – LSC Vials <sup>209</sup> Po – Aqueous in 0.5M HCl	McMurdo Station/ Dry Valleys	McMurdo Dry Valleys LTER
B-422-M	<sup>14</sup> C <sup>3</sup> H	<sup>14</sup> C – Bicarbonate <sup>14</sup> C – Toluene <sup>3</sup> H – Thymidine <sup>3</sup> H – Toluene	McMurdo Station/Dry Valleys	The Role of Natural Legacy on Ecosystem Function and Structure in a Polar Desert
B-422-M	<sup>14</sup> C <sup>3</sup> H	<sup>14</sup> C – Bicarbonate <sup>3</sup> H – Thymidine	McMurdo Station/Dry Valleys	The Role of Natural Legacy on Ecosystem Function and Structure in a Polar Desert
B-423-M	<sup>14</sup> C	<sup>14</sup> C - Bicarbonate <sup>14</sup> C - Sucrose	McMurdo Station/ Dry Valleys	McMurdo Dry Valleys LTER
B-423-M	<sup>14</sup> C	<sup>14</sup> C - Sodium	McMurdo Station/ Dry	McMurdo Dry Valleys

<u>PROJECT</u>	<u>NUCLIDE</u>	<u>FORM</u>	<u>SITE</u>	<u>USE</u>
		Bicarbonate <sup>14</sup> C – Sucrose	Valleys	LTER
O-176-M	<sup>241</sup> Am	<sup>241</sup> Am - Sealed source	McMurdo Station	Collaborative research: Antarctic Troposphere Chemistry Investigation (ANTCI)
O-215-N	<sup>63</sup> Ni	<sup>63</sup> Ni – Foil	<i>R/V Nathaniel B. Palmer</i>	ANSLOPE - Cross slope exchanges at the Antarctic Slope Front (source is inside an electron capture detector of a gas chromatograph)
O-257-S	<sup>63</sup> Ni	<sup>63</sup> 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)
O-398-N	<sup>57</sup> Co	<sup>57</sup> Co – cobalamin (Vitamin B-12)	<i>R/V Nathaniel B. Palmer</i>	Study of the influence of UV radiation and carbon dioxide concentrations in seawater on various enzymes of phytoplankton origin