

**TABLE 2-5
BROOKHAVEN NATIONAL LABORATORY
POLLUTION PREVENTION, WASTE REDUCTION AND RECYCLING PROJECTS (CY 2000) TRACKING SYSTEM**

WASTE DESCRIPTION	REDUCED, REUSED, RECYCLED OR CONSERVED	POUNDS REDUCED, REUSED, RECYCLED OR CONSERVED IN 2000	WASTE TYPE	POTENTIAL COSTS FOR TREATMENT & DISPOSAL	COST OF RECYCLE, PREVENTION	ESTIMATED COST BENEFIT	PROJECT DESCRIPTION DETAILS
HAZARDOUS WASTE							
Photographic Waste	Segregation	2,975	Hazardous Waste	\$14,875	\$10,000	\$4,875	Photography and Graphic Arts Division implemented a pollution prevention project funded by the P2 Council that segregates hazardous fixer from non-hazardous developer. This reduces the hazardous waste stream by approximately 350 gallons (2,975 lbs.) annually, avoiding hazardous waste disposal costs of approximately \$14,875.
Mercury	Reuse	25	Hazardous Waste	\$1,000	\$0	\$1,000	Medical Department staff filtered and recycled approximately 1.6 liters of mercury rather than disposing of the mercury as hazardous waste. This avoided disposal costs estimated at \$1,000.
Chemicals (various)	Reuse	6,000	Hazardous Waste	\$30,000	\$0	\$56,000	As part of the HFBR Facility Stabilization project, Reactor Division staff redistributed 1300 chemicals to researchers around the Laboratory. Reuse of these materials (estimated at 6,000 lbs.) avoided disposal costs of \$30,000 and material costs estimated at \$26,000.
Borated Polyethylene Sheets	Reuse	1,188	Hazardous Waste	\$5,940	\$0	\$5,940	As part of the HFBR Facility Stabilization project, Reactor Division staff transferred 1,188 lbs. of borated polyethylene sheets, used as neutron shields, to the National Synchrotron Light Source for reuse, avoiding disposal costs of \$5,940.
Hydrogen Gas cylinders	Reuse	6,200	Hazardous Waste	\$31,000	\$0	\$31,000	As part of the HFBR Facility Stabilization project, Reactor Division staff returned 31 cylinders (estimated at 200 lbs/cylinder) of hydrogen gas to the vendor, avoiding disposal costs of \$31,000.
Sulfuric Acid	Reuse	20,040	Hazardous Waste	\$100,200	\$0	\$100,200	As part of the HFBR Facility Stabilization project, Reactor Division staff contacted the vendor of this material and arranged a return of 1200 gallons (20,040 lbs.) of sulfuric acid for no cost. This transaction avoided disposal costs of \$100,200.
Boron trifluoride gas filled detectors	Reuse	200	Hazardous Waste	\$1,000	\$0	\$1,000	Boron trifluoride gas filled detectors were returned to the manufacturer for reuse, avoiding disposal as hazardous waste. Approximately 200 lbs. of material was returned, estimated savings of \$1,000.
Lead Acid Batteries	Recycled	7,250	Hazardous Waste	\$36,250	\$0	\$36,250	Estimate 50 lbs./battery and avoided disposal costs as hazardous waste at \$5.00/lb.
Ion Exchange wastewater	Source Reduction	1250	Hazardous and Sanitary Wastewater	\$2,000	\$500	\$1,500	Prefilters were added to the deionization system to polish make up water entering the ion exchange system. This extended the useful life of the ion exchange resins, requiring less frequent regeneration. The regeneration process generates hazardous and sanitary wastewaters. The project is estimated to have eliminated 40 gallons of hazardous waste and 200 gallons of sanitary wastewater. Approximately \$2,000 in disposal costs are avoided annually.
MIXED WASTE							
Solvents	Decay in Storage	85	Mixed Waste	\$10,000	\$0	\$10,000	Ten one-gallon bottles of High Pressure Liquid Chromatography solvent, characterized as mixed waste due to phosphorus-32 contamination was allowed to decay in through ten half-lives in accordance with the decay in storage requirements. This allowed the material to be recharacterized and disposed as hazardous waste instead of much more costly mixed waste. This is estimated to have saved \$10,000.
RADIOACTIVE WASTE							
Shield Block (concrete)	Reuse	668,000	Radioactive Waste	\$1,295,920	\$0	\$1,295,920	In excess of 600,000 lbs. of shield block was reused on site by Plant Engineering and Collider Accelerator Department. Approximately 500,000 lbs. of activated shield block went to the Collider Accelerator Dept. for reuse as shielding for beamlines. Approximately 168,000 lbs. of block was reused by Plant Engineering for shielding at the scrap yard. This avoided disposal costs of approximately \$1,295,920 (estimate 6,680 cubic feet at \$194/cubic foot).
Radioactive Wastewater	Reuse	3,400	Radioactive Wastewater	\$14,800	\$0	\$14,800	As part of the HFBR Facility Stabilization project, Reactor Division Staff collected and reused approximately 400 gallons (3,400 lbs.) of contaminated water during leak testing of piping systems avoiding disposal costs of \$14,800 (\$37.00/gal).
Tritium Exit Signs	Source Reduction	800	Radioactive Waste	\$38,800	\$12,000	\$26,800	Removed 80 tritium exit signs from service and returned to the manufacturer. Replaced with energy efficient light emitting diode (LED) signs. Project reduced risk of tritium gas release and avoided disposal as radioactive waste. Savings from avoided disposal costs estimated at \$38,800 (200 cuft at \$194/cuft), less \$12,000 implementation cost for total savings of \$26,800.
Filters	Decay in Storage	1,920	Radioactive Waste	\$9,312	\$0	\$9,312	Filters from the air handlers in the Linear Accelerator facility become contaminated with beryllium-7, a short-lived isotope eligible for decay. The filters were allowed to decay for over ten half-lives in accordance with the decay in storage requirements. They were surveyed and released as undetectable for disposal as industrial waste. This avoided disposal costs estimated at \$9,312.
INDUSTRIAL WASTE							
Antifreeze	Recycled	935	Industrial Waste	\$4,675	\$0	\$5,675	Estimate avoided disposal cost of \$4675 (935 lbs at \$5.00/lbs) and material savings of \$1000.
Blasocut Machining Coolant	Recycled/Reused	60,000	Industrial Waste	\$304,800	\$0	\$304,800	Central Shops Division operates a recycling system that reclaims Blasocut machining coolant and supplies it labwide. 7,500 gallons of Blasocut lubricant were recycled in 2000. Recycling involves aeration, centrifuge, and filtration. Avoids cost of disposal as industrial waste (\$5.00/lbs), plus an avoided cost of procurement of 6 drums of concentrate (\$800/drum) for a total savings of \$304,800. Cost of recycle is estimated to be the same as cost of procurement and preparation of proper dilution for use.
Used Motor Oil	Recycled	23,065	Industrial Waste	\$115,325	\$0	\$115,325	Estimate avoided disposal cost of \$115,325 (23,065 lbs. at \$5.00/lb.).
SANITARY WASTE							
Office Paper	Recycled	672,940	Sanitary Waste	\$26,918	\$0	\$26,918	Estimate \$80/ton for disposal as trash.
Cardboard	Recycled	263,960	Sanitary Waste	\$10,558	\$0	\$10,558	Estimate \$80/ton for disposal as trash.

**TABLE 2-5
BROOKHAVEN NATIONAL LABORATORY
POLLUTION PREVENTION, WASTE REDUCTION AND RECYCLING PROJECTS (CY 2000) TRACKING SYSTEM**

WASTE DESCRIPTION	REDUCED, REUSED, RECYCLED OR CONSERVED	POUNDS REDUCED, REUSED, RECYCLED OR CONSERVED IN 2000	WASTE TYPE	POTENTIAL COSTS FOR TREATMENT & DISPOSAL	COST OF RECYCLE, PREVENTION	ESTIMATED COST BENEFIT	PROJECT DESCRIPTION DETAILS
Scrap Metal	Recycled	1,069,340	Sanitary Waste	\$42,774	\$0	\$42,774	Estimate \$80/ton for disposal as trash.
Bottles/Cans	Recycled	39,020	Sanitary Waste	\$15,608	\$0	\$15,608	Estimate \$80/ton for disposal as trash.
Construction Debris	Recycled	486,440	Sanitary Waste	\$19,458	\$0	\$19,458	Estimate \$80/ton for disposal as trash.
Cooling Tower Packing	Reuse	11,880	Sanitary Waste	\$2,000	\$0	\$2,000	As part of the HFBR Facility Stabilization project, Reactor Division Staff returned 192 cubic feet (11,880 lbs.) of cooling tower packing material to the vendor at no cost, avoided handling and landfill charges estimated at \$2,000.
Supplies and Equipment	Reuse	11,000	Sanitary Waste	\$126,000	\$0	\$136,000	As part of the HFBR Facility Stabilization project, Reactor Division staff sought users for supplies and equipment through placement of ads in the Brookhaven Bulletin. This resulted in the transfer of approximately \$126,000 worth of supplies and avoided disposal costs of approximately \$10,000.
Granular Charcoal	Reuse	9,680	Sanitary Waste	\$6,300	\$0	\$6,300	As part of the HFBR Facility Stabilization project, Reactor Division staff returned twenty-one 55-gallon drums (9,680 lbs.) of granular activated charcoal to the vendor at no cost, avoided handling and landfill charges estimated at \$6,300.
	TOTALS	3,323,715		\$2,045,247	\$12,500	\$2,043,747	