BROOKHAVEN NATIONAL LABOROATORY
1999 POLLUTION PREVENTION, WASTE REDUCTION AND RECYLING PROJECTS
TRACKING SYSTEM

WASTE DESCRIPTION	CONTACT PHONE	REDUCED, REUSED, RECYCLED OR CONSERVED	POUNDS REDUCED, REUSED, RECYCLED OR CONSERVED IN 1999	WASTE TYPE	POTENTIAL COSTS FOR TREATMENT & DISPOSAL	COST OF RECYCLE, PREVENTION	ESTIMATED COST BENEFIT	PROEJECT DESCRIPTION DETAILS
Paint, 1800 gallons of excess material	Pete Stelmaschuk, ext 3981	Reused	18,000	Hazardous Waste	$12,000	$0	$18,000	1800 gallons of paint was donated to Town of Brookhaven for reuse. Material consisted of colors no longer used and small batches of specialty paints. Disposal cost is estimated at $12,000. Internal handling, characterization, and transportation costs estimated at $6,000. Created excellent public relations with Town and ultimate recipients.
3 Chillers for Cooling Water Systems	Tom Lambertson, ext. 3352	Conserved	12,850,000	Water	$2,040	$0	$2,040	During clean out of Oceanography building, three chillers were identified as available and were reused the Central Shops to replace once-through cooling water systems. Estimated water conservation is 1.5 million gallons, assuming flowrates of 5 GPM, and operation for 10 weeks/year for the three systems (12.85 million lbs of water). Estimated cost for supplying and then disposing of water is $1.35/1000 gallons.
Millipore RO System	John Sutherland, ext	Reused	200	Sanitary	$200	$0	$2,000	During clean out of Oceanography, reverse osmosis system was scheduled for removal and disposal as trash. The system was described in an email to ESH Coordinators, resulting in a use being identified for Biology experiments at the National Synchrotron Light Source (NSLS).
Lead Bricks for Hot Cell	Ed Richards, ext. 7251	Reuse	172,000	Mixed Waste	$405,725	$100,000	$305,725	Reused over 7,000 radioactive lead bricks for shielding in the Hotcell being constructed at Waste Management Division. Avoided cost of disposal as mixed waste is estimated at $405,725 ($2/lbs for disposal x 172,000 lbs, plus $61,725 for packaging, handling, and transportation). Project eliminates potential environmental impact of storing waste bricks.
Waste Oil	Roland Baillargeon, ext.3261	Source Reduction	3,500	Hazardous Waste	$6,000	$0	$20,000	350 gallons of waste oil contaminated with chlorinated compounds required disposal as hazardous waste at cost of $6,000. Source of chlorinated compound contamination was identified and replaced with non-chlorinated substitute. Waste oil is now removed free of charge and used for energy recovery. Estimate three batches per year.
Deionization System regeneration wastes	Ron Beauman, ext. 7418	Source Reduction	1,000	Hazardous Waste	$1,000	$9,000	$3,000	Installed a deionization system on the make-up water supply at NSLS cooling water system allowing longer periods between regeneration of resins. Reduces approximately 110 gallons of hazardous waste, and saves labor by decreasing frequency of regeneration (estimated $2,000)
Purge Water Low-Flow, Low-Purge Well Sampling	Doug Paquette, ext. 7046	Source Reduction	1,164,000	Radioactive and Hazardous Wastes	$450,000	$23,000	$820,000	Project involved procurement of low-flow, low-purge well sampling equipment and training of sampling team. Eliminates approximately 137,000 gallons of contaminated purge water (1,164,000 lbs) at an estimated cost of $450,000 for treatment and disposal, and reduces labor costs by an estimated $370,000.(1,164,000 lbs = 138,000 gallons of contaminated purge water)
Fluorescent Lamps	Mike Clancy, ext. 7651	Recycling	82,248	Hazardous Waste	$109,000	$25,000	$84,000	A total of 41,124 fluorescent bulbs were sent to Mercury Technolgoies Inc, Division of AERC for recycling in 1999. Estimating 2 lbs/bulb, or a total of 82,248 lbs of bulbs. Disposal of crushed bulbs as mercury waste would have cost approximately $300/drum (mercury less than 260 mg/kg) plus $300/drum labor (crushing, packaging, characterization). At 500 lbs/drum of crushed bulbs, 165 drums of bulbs would have required disposal ($99,000 for crushing/disposal). Transportation is estimated at $10,000 for a total cost avoidance of $109,000.
Fluorescent Lamps	Chris Johnson, ext. 7636	Source Reduction	69,500	Hazardous Waste	$91,740	$40,000	$51,740	29,775 low mercury bulbs were purchased to replace mercury bearing bulbs. Low mercury bulbs are disposable at the local landfill as sanitary waste, thus avoiding generation of hazardous wastes. At 2 lbs./bulb, 69,500 lbs of hazardous waste were avoided. Fluorescent bulbs that are hazardous waste cost approximately $1.32/lbs to dispose, for a total avoided cost of $91,740.
PCB Ballasts	Chris Johnson, ext. 7636	Source Reduction	265	PCB Waste	$1,000	$13,000	$56,000	Proactively remove PCB ballasts in lighting systems. Replacement as a project avoids replacement on a one-by-one basis when a leak occurs. Project cost to replace 53 units estimated at $13,000. Response to leaker (spill response, sampling, cleanup) estimated at $1,300 or $68,900/53 units.
Blasocut Machining Coolant	Tom Lambertson, ext. 3352	Recycled/Reused	30,385	Industrial Waste	$24,180	$0	$24,180	Central Shops Division operates a recycling system that reclaims Blasocut machining coolant and supplies it labwide. 3,570 gallons (or 65 drums) of Blasocut lubricant were recycled in 1999. Recycling involves aeration, centrifuge, and filteration. Avoids cost of disposal as industrial waste ($300/drum = $19,500), plus handling, characterization, shipping and an avoided cost of procurement of 3 drums of concentrate for a total savings of $24,180. Cost of recycle is estimated to be the same as cost of procurement and preparation of proper dilution for use.
AGS Ion Exchange regeneration wastewater	Ed Dale, ext. 7943	Source Reduction	127,500	Radioactive Wastewater	$160,000	$192,000	$136,000	This was a multi-year implementation completed in 1999. Retrofitted ion exchange systems so resins could be removed and disposed as LLW, instead of regenerating them. Regeneration produced ~15,000 gallons of radioactive wastewater annually at an estimated cost of $160,000/yr. Resin removal will produce ~130 cubic feet of resin for disposal instead at an estimated cost of $24,000/yr, for a yearly savings of $136,000/yr. (127,500 lbs =~15,000 gal)
Cylinders returned to Suppliers from Chemistry Dept	Ed Richards, ext. 7251	Recycle	565	HazardousWaste	$25,425	$3,390	$22,035	Returned 113 cylinders from Chemistry Dept to supplier (Mattheson) at a cost of $30/cyclinder, avoiding cost of disposal at an estimated cost of $225/cyclinder.
Lead Acid Batteries	Roland Baillargeon, ext.3261	Recycled	2,200	Hazardous Waste	$5,000	$0	$5,000	Estimate 50 lbs/battery and five per drum for disposal as hazardous waste at $450/drum plus handling, and shipping.
Office Paper	Oscar Blevins, ext. 4806	Recycled	740,000	Sanitary Waste	$29,600	$0	$29,600	Estimate $80/ton for disposal as trash.
Cardboard	Oscar Blevins, ext. 4806	Recycled	248,000	Sanitary Waste	$9,920	$0	$9,920	Estimate $80/ton for disposal as trash.
Scrap Metal	Mike Guacci, ext. 2976	Recycled	126,000	Sanitary Waste	$5,000	$0	$5,000	Estimate $80/ton for disposal as trash.
Bottles/Cans	Oscar Blevins, ext. 4806	Recycled	42,200	Sanitary Waste	$1,690	$0	$1,690	Estimate $80/ton for disposal as trash.
Tires	Roland Baillargeon, ext.3261	Recycled	30,400	Sanitary Waste	$1,216	$0	$1,216	Estimate $80/ton for disposal as trash.
Construction Debris	Oscar Blevins, ext. 4806	Recycled	704,000	Sanitary Waste	$19,500	$0	$19,500	Estimate $80/ton for disposal as trash.

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Antifreeze	Roland Baillargeon, ext.3261	Recycled	1,232	Industrial Waste	$1,500	$0	$1,500	Estimate 3 drums for disposal as industrial waste liquid.
Used Motor Oil	Roland Baillargeon, ext.3261	Recycled	30,345	Industrial Waste	$30,000	$0	$30,000	Estimate of 70 drums (3570 gallons) at $450/drum plus characterization, handling packaging and shipping
Lead	Mike Guacci, ext. 2976	Recycled	1,400	Hazardous Waste	$2,000	$0	$2,000	Estimate 3 drums for disposal as hazardous waste.
		TOTALS	**16,444,940**		**$1,393,736**	**$405,390**	**$1,650,146**	