WASTE DESCRIPTION	TYPE OF PROJECT	POUNDS REDUCED, REUSED, RECYCLED OR CONSERVED IN 2005	WASTE TYPE	POTENTIAL COSTS FOR TREATMENT & DISPOSAL	COST OF RECYCLE, PREVENTION	ESTIMATED COST SAVINGS	PROJECT DESCRIPTION DETAILS *
Aerosol Can Disposal System	Recycling	66	66 pounds of hazardous waste	$991	$1,700	$991	Allows spent aerosol cans to be recycled scrap metal rather than sent to WMD as hazardous waste
Formaldetox	Source Reduction	128	128 pounds of lab pack industrial wastes expected to be removed	$2,120	$1,040	$2,120	Neutralizes non-hazardous para-formaldehyde, chlorix, bleach and rat blood
Replacement of IO Mercury Thermometers	Substitution	20	Mercury	$2,350	$250	$2,350	Approximately 20 lb of mercury-containing thermometers were removed from IO laboratories during 2005. Savings are based on the cost of one mercury spill and cleanup.
Replacement of PO Mercury Thermometers	Substitution	30	Mercury	$2,350	$450	$2,350	Approximately 30 lb of mercury-containing thermometers were removed from Physics laboratories during 2005. Savings are based on the cost of one mercury spill and cleanup.
Photon Counting Spectroflurometer	Substitution	54	2 ft3 of mixed waste and 1000 man-hours	$10,540	$46,350	$25,540	Eliminated the need for radioactive assays and the subsequent generated radioactive waste. Cost savings include 1000 man-hours and savings on material costs
Replacement of Mercury Utility Devices	Substitution	120	Mercury		$12,000	$2,350	Approximately 120 lb of mercury-containing devices were removed from utility devices during 2005. Savings are based on the cost of one mercury spill and cleanup.
Animal Bedding Conveying System Dismantling *	Recycling	2,000	250 ft3 of LLRW	$38,974	$5,000	$38,974	This is a multi-year / multiple Department funded initiative that will eliminate LLRW and provide a safer work environment in the Medical Dept.
PCB Transformer Carcus Removal	Removal	4,000	High level risk to the Lab		$6,251	$6,000	This was the final stage of a multiyear / multiple Department funded initiative to eliminate some electrical components which were PCB contaminated
Recovery of CFC R-113 from Building 511 Chiller	Substitution	490	Reduction of Class 1 Ozone Depleting Substances	$4,250	$500	$3,750	Recovery and reuse by another DOE facility of 490 pounds of R-113 (a Class 1 ODS)
Halogen 1211 Fire Extinguisher St	Substitution	1,700	Reduction of Halogenated Ozone Depleting Substances		$10,000	$6,250	1700 pounds of halogen 1211 removed from service and replaced with non-ozone depleting substances
EP Grounds Vehicle Wash *	Waste Minimization	8,000	oils/grease to soils	$16,000	$3,000	$16,000	This is a multi-year / multiple Department funded initiative that will eliminate the potential of oil and grease being released to soil
208 Hopper Demolition	Recycled	12,000	Legacy Waste and Safety Risk to Lab	$12,000	$8,100	$4,000	This is a multiple Department funded initiative that eliminated a potential legacy waste and a severe safety concern.
Lab-Wide Earth Day Mercury Disposal Amnesty	Removal	30	Mercury		$6,000	$2,350	Approximately 30 lb of mercury-containing waste was removed from use during this 2005 amnesty program. Savings are based on the cost of one mercury spill and cleanup.
Automotive Waste	Substitution	510	Hazardous Waste	$1,061	$0	$1,000	In 2004, solvent-based brake cleaners were replaced, reducing the hazards associated with their use and disposal.
Mercury Utility Devices	Substitution	60	Mercury	$1,750	$0	$1,750	Approximately 60 lb of mercury-containing devices were removed from Buildings 463 and 490 in 2004. Savings are based on the cost of one mercury spill and cleanup.
PCB Oils	Retrofill	1,200	Hazardous Waste	$2,850	$0	$2,850	Approximately 150 gal of PCB-laden oil were removed from the ATF Klystron in 2004. Savings are based on the cost of one PCB spill and cleanup.
Organic Solvents	Substitution	678	Hazardous Waste	$1,410	$0	$26,000	Life Sciences purchased a Microwave Peptide Synthesizer in 2004 to significantly reduce the amount of hazardous wastes generated. Saves ~1,000 work hours/year (reflected in cost savings).
Organic Solvents	Purification/Reuse	480	Hazardous Waste	$998	$0	$10,915	The primary cost saving of the BES solvent purification system, new in 2004, is in not purchasing new solvent.
Cooling Water	Reuse	80,000	Deionized water	$0	$0	$10,000	A closed-cycle water recycling system for the Building 480 melt spinner was purchased in 2004. This saves a minimium of 10,000 gal of ultra-pure water and extends the life expentancy of equipment worth $100,000.
PCB Oils	Removal	3,110	Hazardous Waste	$6,469	$0	$2,850	In 2004, ~300 gal of pure PCB oil were drained from the transformer and rectifier in Building 901 (former PET Facility). Also removed were 30 PCB capacators and 11 PCB transformers. Savings are based on the cost of one PCB spill and cleanup.
Mercury Utility Devices	Substitution	40	Mercury	$2,300	$0	$2,300	OMC replaced mercury-containing equipment with non mercury-containing equipment in 2004. Savings are based on the cost of one mercury spill and cleanup.
Radioactive Waste	Source Reduction	1,500	Radioactive Waste	$6,000	$0	$6,000	A sorting table was purchased in 2003 for the Waste Yard, so clean waste could be sorted from radioactive waste.

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Radioactive Emissions	Emission Reduction	0	Radioactive Emissions			$0	A shroud was installed over the 16-inch diameter shaft in the Hot Cell of the BLIP, isolating cooling water from the rapidly moving air of the exhaust system and allowing radiological decay within the water system. Slowing the diffusion into the hot cell air will effectively reduce gaseous emissions into the exhaust stack, as these radionuclides have very short half lives.
Radioactive Waste generated through wet chemistry	Waste Minimization	30	Mixed waste / Liquid Radioactive Waste	$17,600	$0	$22,500	The purchase of a Kinetic Phosphorescence Analyzer (KPA) system for uranium analysis eliminated mixed waste generation in this chemistry laboratory, reduced by 90% the volume of liquid waste, reduced by 90% the amount of radioactive material handled, minimized exposure to uranium by laboratory personnel, and decreased labor time by 75%.
Radioactive Waste from labeled chemicals	Waste Minimization/ Volume Reduction	0	Solid Radioactive Waste	$2,168	$0	$2,168	A vial crusher for glass vials, pipettes, and other glassware was purchased to reduce volume of rad waste.
Radioactive and Mixed Wastes from radio-labeled chemicals	Waste Minimization	112	Mixed Waste	$27,690	$0	$27,690	A microplate scintillation counter was purchased to to reduce mixed waste generation.
Pump Oil	Substitution	51	Hazardous Waste / Industrial Waste	$3,520	$0	$3,520	Oil-displacement pumps were replaced with dry pumps for both laboratory and aircraft missions.
Photographic Waste	Substitution	3,840	Hazardous Waste / Industrial Waste	$7,600	$0	$16,489	A photographic processor reduced the amount of chemicals used and waste generated by up to 80%.
Electrophoretic Mini-Gels	Microscale Chemical Use	2,200	Hazardous Waste - Lab Pack	$10,576	$0	$10,576	This system minimizes silver waste from silver-staining electrophoretic mini-gels. Savings reflect avoided waste disposal costs and lower material purchase costs ($6,000).
Hydraulic Oil	Product Substitution	3,000	Industrial Waste	$26,000	$0	$26,000	Hydraulic lift bays in the Motor Pool Shop were retrofitted to vegetable-based hydraulic oil in 2002. During 2005 an underground hydraulic pipe leak occured. The hydraulics were re-piped above ground and the oil was allowed to biodegrade in place.
Sewage Sludge	Volume Reduction	122,570	Radioactive Waste	$232,080	$0	$226,480	Disposal of 60,000 gal of radioactive STP liquid waste by a contractor would cost $910,000. Instead, the waste is dried using rolloffs, absorbent, and lime and shipped via rail to a disposal facility. A second drying bed was built to dry sludge (96% volume reduction) from the anaerobic sludge digester.
Film and other radioisotopic imaging	Substitution	300	Hazardous Waste / Industrial Waste	$22,000	$0	$22,000	Replacement of film-based autoradiography and other radioisotopic imaging with a Phosphor Imager reduced hazardous waste generation by 200 lb and industrial waste generation by 100 lb. Additional projected savings are in annual supply costs and labor reduction.
Digital Imaging System	Substitution	282	Hazardous Waste / Radioactive Waste / Industrial Waste	$25,000	$0	$25,000	Reduction of hazardous (134 lb), radioactive (80 lb), and industrial (68 lb) waste with installation of a digital imaging system. Additional projected savings are in annual supply costs and labor reduction.
Fluorescence-Based Assay	Substitution	200	Mixed Waste	$30,550	$0	$30,550	Development of a fluorescence-based assay for the DNA-dependent protein kinase (DNA-PKcs), replacing the 32P assay.
Lead Acid Batteries	Recycled	9,200	Hazardous Waste	$19,136	$0	$19,136	Estimate 40 lb/battery and avoided disposal costs as hazardous waste.
Ion Exchange wastewater	Source Reduction	1250	Hazardous and Sanitary Wastewater	$2,600	$100	$2,500	Prefilters, added to the deionization system, polish makeup water entering the ion exchange system. This extends the useful life of the ion exchange resins, requiring less frequent regeneration. The regeneration process generates hazardous and sanitary waste. There is a small annual cost for replacement supplies.
Smoke Detectors	Source Reduction	513	Mixed Waste	$112,039	$10,650	$101,389	In 2005, 171 Americium smoke detectors were removed from service, returned to the manufacturer, and replaced with non-rad detectors. This ongoing project reduces the risk of americium being released to the environment and avoids eventual disposal as mixed waste.
Cooling Water	Reuse	6,800	Radioactive Waste	$16,266	$0	$16,266	Approximately 850 gal (6,800 lb) of cooling water were reused in the main magnet cooling water system, avoiding disposal as radioactive waste water.

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Short Half-life waste	Decay in Storage	25	Radioactive Waste	$2,308	$0	$2,308	Short half-life isotopes, particularly phosphorus-32 and phosphorus-33, are frequently used in life sciences experiments. In 2005, wastes from these operations (6 ft3) were managed in accordance with BNL decay-in-storage requirements, rendering the wastes eligible for volumetric release.
Lubricating Oil	Energy Recovery	4,000	Industrial Waste	$8,320	$500	$8,000	In 2005, ~4,000 lb (500 gal) of lubricating oils were collected, tested for suitable for use as waste oil fuel, and used for energy production at the Central Steam Facility. Avoided disposal cost was $8,000. Cost of testing ($500) was offset by fuel use savings ($1.00/gal).
Cooling Tower Chemicals	Source Reduction	6,375	Industrial Waste	$15,000	$0	$15,000	In 2001, ozone water treatment units were installed on cooling towers at two RHIC experiments to provide biological control of cooling water. These systems eliminate the need for water treatment chemicals (typically toxic biocides), save labor, and reduce analytical costs for monitoring cooling tower blowdown.
Blasocut Machining Coolant	Recycled/Reused	31,120	Industrial Waste	$68,630	$0	$75,030	Central Shops Division operates a recycling system that reclaims Blasocut machining coolant and supplies it labwide. 3,890 gal (31,120 lb) of Blasocut lubricant were recycled in 2005. Recycling involves aeration, centrifuge, and filtration. This avoids cost of disposal as industrial waste plus an avoided cost of procurement of 8 drums of concentrate ($800/drum) and 78 drums for waste ($50/drum).
Used Motor Oil	Energy Recovery	34,560	Industrial Waste	$75,785	$0	$83,370	Used motor oil from the motor pool and the on-site gas station is picked for free up by Strebel's Laundry Service and used to fire their waste oil dryers. In 2005, 4,320 gal of oil were picked up, avoiding cost for disposal and 87 drums for shipping ($50/drum).
Office Paper	Recycled	388,000	Sanitary Waste	$19,400	$0	$19,400	Estimate $100/ton for disposal as trash.
Cardboard	Recycled	314,000	Sanitary Waste	$15,700	$0	$15,700	Estimate $100/ton for disposal as trash.
Scrap Metal	Recycled	1,122,000	Sanitary Waste	$56,100	$0	$56,100	Estimate $100/ton for disposal as trash.
Bottles/Cans	Recycled	42,000	Sanitary Waste	$2,100	$0	$2,100	Estimate $100/ton for disposal as trash.
Construction Debris	Recycled	578,000	Sanitary Waste	$13,005	$0	$13,005	Estimate $45/ton for avoiding disposal as trash.
	TOTALS	**2,786,644**		**$943,584**	**$111,891**	**$1,018,966**	

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