

## **NETL's SIGNIFICANT ENVIRONMENTAL ASPECTS - October 2001**

- Aspect 1 – Waste Generation, Management, and Disposal Practices**
- Aspect 2 – Energy and Fuel Use**
- Aspect 3 – Hazardous Materials Procurement, Consumption, Storage, and Release**
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- Aspect 6 – Potential Exposure to Toxic Chemicals and Energy Releases (Improving Chemical Handling Facility and its Operations)**
- Aspect 7 – Understanding of Surface Water and Storm Water Discharge Impacts**
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- Aspect 9 – Off-Site Noise Generated Onsite**
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## DESCRIPTION OF CONTENTS OF DOCUMENT

This document contains the following:

C *NETL's Significant Environmental Aspects*

These aspects were developed by NETL's Environmental Management System (EMS) Crosscutting Team. The team analyzed nearly 200 NETL projects, facilities, and activities using an analysis/scoring matrix described in NETL Order 450.1. Many of the "drivers" for these aspects were DOE and/or Executive Order requirements.

C *NETL's Objectives and Targets* associated with managing the significant environmental aspects.

C *Action Plans* for achieving these objectives and targets. These action plans are "mini" versions of environmental management programs/plans (EMPs) required under NETL's EMS. Please note that many of the costs are "ball-park" costs and some further refinement is required.

## **Aspect 1 – Waste Generation, Management, and Disposal Practices**

*Statement of Aspect:* NETL generates, manages, and disposes of significant volumes of wastes, including non-hazardous sanitary wastes, hazardous wastes, and construction and demolition wastes. To implement Executive Order requirements, DOE Headquarters recently established waste reduction/pollution prevention goals to be implemented and tracked at all DOE facilities.

Compliance with DOE's pollution prevention goals will help improve, reinforce, and reinvigorate NETL's pollution prevention and waste minimization programs, which are the foundations of NETL's environmental policy and its environmental management system.

### **Objectives and Targets**

**Objective 1:** To reduce NETL's non-hazardous (i.e., sanitary) wastes (e.g., paper, cardboard, food wastes).

**Target:** DOE Target -- 75% reduction by 2005 and 80% reduction by 2010, using a 1993 baseline (641.0 metric tons). *NETL Interim Target -- 6% reduction annually during 2001 - 2005, based on FY1993 baseline (total - 30% reduction).*

**POCs:** Bruce Webster, ES&H Division; Joe Kanosky, Site Operations Division.

**Objective 2:** To reduce NETL's hazardous wastes (e.g., laboratory chemicals; janitorial chemicals).

**Target:** DOE Target -- 40% reduction by 2005, using a 1993 baseline (18.46 metric tons). *NETL Interim Target: 5% reduction annually during 2001 - 2005, based on FY1993 baseline (total - 25% reduction).*

**POCs:** Colleen Butcher, Engineering Operations Division; Carmen Romano, EG&G.

**Objective 3:** To recycle NETL's non-hazardous (i.e., sanitary -- paper, cardboard, and food waste) wastes.

**Target:** DOE Target: 45% recycling of on-site non-hazardous wastes by 2005 and 50% by 2010 (baseline not applicable in this case). *NETL Interim Target: 7% recycling increase annually during 2001 - 2005, based on FY2001 baseline (total - 35% recycling increase).*

**POCs:** Bruce Webster, ES&H Division; Joe Kanosky, Site Operations Division.

**Objective 4:** To segregate NETL's construction and demolition wastes (e.g., concrete; wood; drywall; masonry; metal; asbestos; lead) for better handling and disposal with the eventual goal of improving the

percentage recycled.

**Target:** NETL Target: 75% of all construction and demolition wastes segregated for recycling and/or disposal by 2005.

**POCs:** Tom Snyder and Larry Kincell, Site Operations Division; Al Koradi, TJR.

**Action Plan**

<b>Proposed Near-Term (FY2002) Actions</b>	<b>Preliminary Costs</b>
<i>Objective 1: To reduce non-hazardous (i.e., sanitary) wastes (e.g., paper, cardboard, food wastes).</i>	
Provide Computer-based Training (CBT) to NETL employees to increase awareness of NETL requirements for and ways to reduce sanitary waste generation.	\$8K (F, B)
Obtain trash compactor for NETL-MGN in order to obtain more accurate sanitary waste weight determinations; ship sanitary wastes off-site for recycling or disposal.	\$16K (F, I) \$7.5K/yr (R, B)
Review sanitary waste streams for better characterization of wastes.	\$2K (F, I)
Revise janitorial contract to include better separation of recyclables from waste streams; provide for new “laydown” separations area; new janitorial hire required.	\$20K (F, I) \$45K/yr (R, I)
Assess NETL cafeteria operations to determine if use of disposable food containers and silverware could be minimized by using a dishwasher and china plates as well as more stainless steel utensils. If feasible, purchase and install dishwashers.	\$2K (F, B) \$3K (F, I)
<i>Objective 2: To reduce NETL’s hazardous wastes (e.g., laboratory chemicals; janitorial chemicals).</i>	
Distribute a site-wide list of usable chemicals and equipment turned into the NETL Chemical Handling Facility as waste or excess to allow continued use by on-site researchers, rather than disposing of these items as waste or excess materials or items.	\$10K/yr (R, B)
Require NETL researchers to search the site-wide stored chemicals database prior to purchasing new chemicals for on-site use.	\$10K/yr (R, B)

Proposed Near-Term (FY2002) Actions	Preliminary Costs
Utilize solvent recovery device (already purchased) to recover waste solvents for on-site use to minimize amount of used solvent being disposed.	\$10K/yr (R, I)
Reestablish NETL's Waste Minimization/Pollution Prevention Committee (via Colleen Butcher and Bruce Webster oversight) to review R&D processes at NETL and to assess procedures and operations for process modification to reduce chemical use and waste generation.	\$15K/yr (R, I)
Reinstitute Pollution Prevention Opportunity Assessments to spot check to determine the potential to reduce/minimize wastes generated during R&D process operations at both NETL sites.	\$20K/yr (R, I)
Review hazardous wastes disposed by category and revisit waste determination (e.g., perform review to see if any wastes can be reclassified)	\$5K/yr (R, I)
<i>Objective 3: To recycle NETL's non-hazardous (i.e., sanitary) wastes.</i>	
Expand the universe of NETL recyclables, removing previously non-recycled items (e.g., food wastes and paper products) from the sanitary waste stream for reclassification as recyclable.	\$15K/yr (R, I)
Review cafeteria operations and practices to determine what can be reused or composted. (Note: Developing a program to include paper-product recycling and composting of food could take a considerable amount of man-hours.) In addition, the use of biodegradable plastic products or washable dishes (sanitized using a dishwasher) may be options to be investigated	\$10K (F, B)
<i>Objective 4: To segregate NETL's construction and demolition wastes (e.g., concrete; wood; drywall; masonry; metal; asbestos; lead) for better handling and disposal.</i>	
Investigate the "feasibility" of implementing this construction/demolition segregation objective. (Note: It has been estimated by some that attaining this goal would double, and in some cases, triple the cost of current and future demolition projects [primarily due to increased labor hours necessary to separate demolition wastes]. Additional future costs would be attributable to purchasing/renting additional dumpsters [one for each type of segregated waste]).	\$15K (F, I)

Legend:

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*Additional Information Related to Aspect Scope:*

Objective 1: A 5-yr 30% reduction of on-site non-hazardous sanitary wastes would require a comprehensive waste minimization and pollution prevention program. Efforts would include enhancements to the existing recycling program; promotion of a paperless office, via the use of e-mail and intranet messages; and continued computer-based training in Pollution Prevention, Waste Minimization and Recycling.

Objective 2: Meeting the 5-yr 25% reduction in hazardous materials would require more stringent chemical handling procedures and their enforcement. Currently researchers can voluntarily reduce the amount of hazardous materials in their laboratories by contacting the Chemical Handling Facility to have old chemicals removed. A structured inventory and disposal program and more rigorous dispensing program could significantly reduce the quantity of hazardous materials on-site.

Objective 3: NETL's recycling program includes the recycling of mixed office waste, aluminum cans, newspapers, corrugated cardboard, magazines, shredded document paper, three-ring binders, and toner cartridges (depending on the brand, not all cartridges may be accepted, some are being stockpiled). The NETL sites use different vendors to handle recycling, and as a result, the amounts of recycled materials may vary. The "return on" NETL's recycling program is about \$1,500 - \$3,000/yr. Recycling efforts could be expanded to include: (1) various phases of NETL's food services; (2) coffee can recycling; and (3) non-corrugated cardboard recycling. Reuse of cafeteria dinnerware and flatware (i.e., using washable china and utensils, as opposed to disposable paper products) is also possible, but may not be feasible. Composting of cafeteria/food waste (along with other materials such as grass clippings) may be an option, however, this would require training of food service employees and purchasing of separate receptacles for the various types of waste for each cafeteria. In addition, composting may result in odor and vermin nuisances. Coffee can recycling could easily be factored into the recycling program -- collection stations need to be identified. Non-corrugated cardboard recycling would demand separation of waste at the source, requiring additional man-hours.

Objective 4: Within the last 12-month period, NETL has segregated 10% of its glass waste and 20% of its heavy steel from demolition activities for recycling or disposal. This level of waste segregation was higher than most years because of site development plans, and because of the types of waste comprising each project. This statistic will fluctuate year-to-year based on the type of construction activities occurring. (Asbestos and lead demolition wastes are currently segregated for disposal as required by law). A 5-yr goal of 75% construction and demolition waste segregation would require significant cost, effort, and time expenditures, which may make this initiative economically unfeasible. Issues to consider: Some wastes are sealed together and cannot be separated (e.g., steel and concrete decking) and vendors may not be interested in collecting materials for recycling unless there are large quantities stockpiled. Most NETL construction and demolition wastes fall far below this volume, meaning wastes would have to be stored on site until a suitable volume is accumulated. For masonry and concrete waste, a 4-acre site would be necessary to store wastes for 10 years before acceptable

volumes could be accumulated. There are currently no recycling vendors (in the Pennsylvania and West Virginia) willing to recycle drywall and wood. If the materials were segregated at NETL, they might end up in the same landfill -- as if they were still co-mingled with other waste. Specifications for construction/demolition waste segregation would have to be included in "Requests for Proposals" and pre-bid documentation. The added cost of compliance might price many small and 8A firms out of the NETL market.

## **Aspect 2 – Energy and Fuel Use**

*Statement of Aspect:* The physical plant that is under NETL control is a significant consumer of electrical energy, petroleum, and natural gas. While it is not possible to eliminate the use of these resources, there are methods by which the impact of energy use can be reduced. Reduction of impacts would include decrease in consumption of natural gas and electricity, increased purchase of energy from renewable sources, and increased purchase of energy from less greenhouse-gas intensive sources.

The Department of Energy has mandated energy efficiency goals for the various operating Departments, including NETL (e.g., in DOE Order 430.2 and Executive Order 13123).

### **Objectives and Targets**

**Objective 1:** To reduce NETL energy consumption through life cycle cost effective measures.

**Target:** Start/expand 5 new energy education/planning efforts to invigorate the NETL energy management program.

**Target:** Reduce energy use per square foot in laboratory and industrial (mixed-use) facilities by 20% by FY2005, using a 1990 baseline.

**POCs:** Joe Kanosky and Bernie Avon, Site Operations Division.

**Objective 2:** To increase NETL's purchase of electricity from clean sources.

**Target:** In 100% of future DOE competitive solicitations for electricity, include provisions for such purchase as a component of.

**POCs:** Joe Kanosky and Bernie Avon, Site Operations Division.

**Objective 3:** To reduce annual petroleum consumption for NETL's vehicular fleet.

**Target:** Reduce annual petroleum consumption by 20% by FY2005, using a 1999 baseline.

**Target:** Acquire at least 75% of light-duty vehicles as alternative fuel vehicles.

**Target:** Increase the usage rate of alternative fuel in departmental vehicles to 75% by FY2005 and 90% by FY2010, in areas where alternative fuel infrastructure is available.

**POCs:** Rick Price, Site Operations Division.

### **Action Plan**

<b>Proposed Near-Term (FY2002) Actions</b>	<b>Preliminary Costs</b>
<i>Objective 1: To reduce NETL energy consumption through life cycle cost effective measures.</i>	
Generate Computer Based Training module for general employees.	\$15K (F, I)
Participate in Energy Awareness Month.	Minimal *
Evaluate at least two buildings for Energy Star rating potential.	Minimal **
Submit at least one new energy management retrofit project for funding consideration.	Minimal **
Evaluate at least two applications for the use of off-grid generation.	Minimal **
<i>Objective 2: To increase NETL's purchase of electricity from clean sources.</i>	
Include provisions for such purchase as a component of all future DOE competitive solicitations for electricity.	Minimal ***
<i>Objective 3: To reduce annual petroleum consumption for NETL's vehicular fleet.</i>	
Acquire at least 75% of light-duty vehicles as alternative fuel vehicles (e.g., currently performed on a replacement cycle).	Minimal****

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\* Management, publicity, and similar activities are estimated to be minimal, and would be absorbed in routine operating budgets.

\*\* Facility-related conservation measures are already planned under the annual budget cycle.

\*\*\* Cost would be minimal. The increased cost of energy from clean sources is difficult to estimate, but would most likely not be significant.

\*\*\*\* Conversion to alternate fuels is already considered in the annual budget cycle.

Note: Please also see **Aspect 5 – Reducing Air Emissions** (Objective 2) for additional information on this energy management aspect and its relationship to reducing air emissions.

### Aspect 3 – Hazardous Material Procurement, Consumption, Storage, and Release

*Statement of Aspect:* The nature of the research and development activities at NETL (coal, gas, and oil-related research) as well as its support activities require the use of significant quantities of hazardous materials, primarily in the laboratories. NETL's chemical inventory is very diverse, ranging from minute quantities of expensive chemicals (e.g., iodonitrotetrazolium violet, at \$155/ 5 grams and palladium foil, at \$1,850 per 50x50 mm sheet) to large quantities of relatively inexpensive chemicals like road salt. However, quantity and cost are not the only issues that need to be considered in terms of hazardous materials; the type of chemical purchased is also an issue. For example, biologicals are being used more frequently than in the past. Because of their hazardous and toxic nature these biologicals are a growing concern.

By reducing the amount of chemicals inventoried and stored at NETL, there will be less risk of potential exposure to the general population and the environment. In addition, chemical inventories will become less costly both in terms of "asset" worth and management/maintenance.

#### Objectives and Targets:

**Objective:** To reduce amounts of hazardous materials procured, received, and stored at NETL.

**Target:** Reduce hazardous material inventories/storage (by volume) by 20% by 2005, using 2001 baseline.

**POCs:** Angela Cooper, ES&H Division, Robert Reuther, OST and Sheila Propst, EG&G

#### Action Plan

Proposed Near-Term (FY2002) Actions	Preliminary Costs
Begin to screen R&D projects prior to startup to determine if non-toxic chemicals/reagents can be substituted for the originally specified TRI reagents.	\$10K/yr (R, I)
Screen the on-site inventory to remove non-essential TRI chemicals.	\$15K (F,I)
Investigate the feasibility (including costs, impacts and implementation constraints) related to "just-in-time" chemical purchasing together with better R&D experimental and support operations planning.	\$15K (F, B)

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#### Additional Information Related to Aspect Scope:

While many of the entries in NETL's chemical inventory exist in relatively small quantities, some are in

much larger quantities. Eliminating a few large volume chemicals could satisfy much of the 20% reduction target -- but in reality, it would also require eliminating a significant amount of small quantity chemicals.

Reducing the SARA Title II reporting goes hand-in-hand with reducing the inventory of chemicals procured and then stored on-site. Presently, the chemical special approvers carefully review requisitions for opportunities to reuse existing chemicals and to eliminate redundant purchases. It would require moderate effort to determine which chemicals can be eliminated from NETL's existing chemical inventory and to develop a list of chemicals that are specifically prohibited at NETL (based on their degree of danger to the public and difficulty of disposal). Cleaning out chemicals that are no longer used or that have expired is also an option. (It may be impractical to ask researchers to relinquish chemicals that they may need in the future )

Introducing researchers at the Morgantown facility to the use of a chemical dispensing could be included in long-term plans.

**Aspect 4 – Control over Industrial Wastewater Treatment Facility Operations and its Discharges**

*Statement of Aspect:* NETL-PGH discharges laboratory wastewater to the local Pleasant Hills publicly-owned treatment works (POTW) via its wastewater treatment facility (WWTF-Building 74). Using the current facility configuration, this wastewater treatment facility is not able to consistently remove mercury, cyanide, and copper contaminants from the influent wastewater to a level that complies with the requirements set forth in the recently enacted Pleasant Hills, Pennsylvania Authority Industrial Sewer Use Pretreatment Permit Program. As a result, NETL has recently received three (3) Notice of Violations (NOV’s) for seven (7) violations of the permit discharge limits. This is contrary to the NETL Environmental Policy that specifically states that “It is the policy of NETL . . . to conduct its operations in compliance with relevant Federal, state, and local environmental laws, regulations, and other requirements”.

The primary benefit of managing this aspect is that the NETL-PGH site will achieve and maintain compliance with its industrial wastewater permit and thus eliminate the NOV’s (notices of violation) received from the Pleasant Hills Authority. This would remove the possible threat by the local authority to disallow the flow of wastewater to the POTW and subsequently insure that R&D operations can continue. Additionally NETL will be discharging “cleaner” water that should benefit both the local POTW and community.

**Objectives and Targets**

**Objective:** To reduce or eliminate violations and maintain compliance with the NETL Industrial Sewer Use Pretreatment Permit issued by the Pleasant Hills Authority.

**Target:** No violations of permit in FY2002, after completion of automation of the WWTF and the addition of polishing treatment steps.

**POC’s:** Bruce Webster and Eli George, ES&H Division; Rich Jeffries, EG&G

**Action Plan**

<b>Proposed Near-Term (FY2002) Actions</b>	<b>Preliminary Costs</b>
Purchase any additional equipment/supplies necessary to automate, operate and maintain the WWTF in a manner that will maintain NETL treated effluent quality in compliance with Industrial Sewer Use Pretreatment permit limits. Costs include purchasing and maintaining additional polishing equipment, obtaining samples, and performing (increased level of) laboratory analysis.	\$100K (F, I) \$20K/yr (R, B)
Continue treating additional Building 141 process waters.	\$15K/yr (R, B)
Perform analysis on alternatives that will enable NETL to replace ferric chloride used in WWTF with a mercury-free acidic additive for pH adjustment.	\$10K (F, I)

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## Aspect 5 – Air Emissions

*Statement of Aspect:* The scoring process for environmental aspects identified air emissions as the most crosscutting aspect at NETL. This resulted primarily from the volume of flue gases generated by combustion processes, both from on-site R&D and from off-site electricity generation (e.g., purchasing electricity from cleaner sources). NETL's concerns about air emissions are driven primarily by DOE goals, which are based on executive orders. There have been no regulatory violations to date, and compliance with regulations and permit requirements has not been a significant problem.

By managing this aspect, NETL can meet the goals established by Executive Order 13148 (Greening the Government through Leadership in Environmental Management) and Executive Order 13123 (Greening the Government Through Efficient Energy Management). It also reduces the possibility of causing adverse environmental impacts in nearby neighborhoods.

The specific air emission aspects are:

- C NETL has numerous devices containing ozone-depleting substances, primarily chlorofluorocarbon (CFC) and hydrochlorofluorocarbon (HCFC) refrigerants, which pose a risk to stratospheric ozone concentrations.
- C Most greenhouse gas emissions associated with NETL's operations are indirect, and come from the off-site generation of electricity and from motor vehicle operation. The direct on-site generation of greenhouse gases, on the other hand, is relatively small and is an unavoidable result of our mandated research in fossil fuel combustion.
- C NETL regularly replaces aging vehicles with new ones, providing an opportunity for the DOE to showcase its commitment to cleaner-burning automotive fuels. This is an easy opportunity for NETL to reduce its incidental emissions of greenhouse gases and smog-causing gases.
- C One continuing concern is the emission of toxic substances from the R&D projects on-site. These substances are mostly volatile organic compounds (VOCs), but include other compounds and metals. There are two emission categories: combustion flue gases and hood vent gases. Combustion flue gases may contain trace amounts of dioxins, furans, acid gases, metals and other pollutants. Hood vent gases frequently contain various volatile and semi-volatile organic compounds. The exhaust rate of toxic substances is currently undetermined for at least some vents/stacks.
- C Painting operations have been identified as a possible significant source of volatile organic compound emissions at NETL. These emissions pose a hazard to both workers and the environment. No paint booths exist at NETL to capture VOC emissions for treatment.

### Objectives and Targets

**Objective 1:** To reduce use of ozone depleting substances.

**Target:** DOE Target -- By year 2005, retrofit or replace 100% of chillers greater than 150 tons of cooling capacity and manufactured before 1984 that use Class I refrigerants.

**Target:** DOE Target -- Eliminate use of Class I refrigerants by year 2010, to the extent economically practicable and to the extent that safer alternatives are available.

**POCs:** Joe Kanosky and Bernie Avon, Site Operations Division

**Objective 2:** To reduce generation of greenhouse gases.

**Target:** DOE Target -- Reduce generation of greenhouse gases attributed to facility energy use through life-cycle cost effective measures by 25% by year 2005 and 30% by year 2010.

**POCs:** Joe Kanosky and Bernie Avon, Site Operations Division

**Objective 3:** To increase use of alternative fuels in vehicles.

**Target:** DOE Target -- At least 75% of the light-duty vehicles acquired each year should be capable of using alternative fuels.

**Target:** DOE Target -- Usage of alternative fuels in alternative fuel vehicles should increase to 75% by year 2005 and to 90% by year 2010.

**POCs:** Rick Price, Site Operations Division

**Objective 4:** To decrease air emissions of toxic compounds.

**Target:** DOE Target -- Reduce air emissions of toxic compounds, including a reduction in Toxic Release Inventory (TRI) listed items by 20% by year 2005.

**POCs:** Eli George and Rodger Dotson, ES&H Division

**Objective 5:** To decrease air emissions from painting operations.

**Target:** Reduce volatile organic compound (VOCs) from painting operations by 50% by year 2005.

**POCs:** Rodger Dotson, ES&H Division

**Action Plan**

<b>Proposed Near-Term (FY2002 and FY2003) Actions</b>	<b>Preliminary Costs</b>
<i>Objective 1: To reduce use of ozone depleting substances.</i>	
Replace two 225 ton Carrier packaged water chillers that supply Building 94 in Pittsburgh using R-11 (Class I) refrigerant in FY2002 if funding becomes available from the Federal Energy Management Program (FEMP). FEMP has validated a \$500K request from NETL's SOD for this replacement project. NETL's ES&HD will provide an additional \$500K for this project.	\$1,000K (F, I)

<b>Proposed Near-Term (FY2002 and FY2003) Actions</b>	<b>Preliminary Costs</b>
When smaller devices that contain R-12 (CFC) or R-22 (HCFC) refrigerants need to be replaced, replace with devices that contain other refrigerants (using SOD funding). No special SOD funding is anticipated for this program to accelerate the replacement process. However, NETL will review and modify as appropriate the work control process for replacement of devices using Class I refrigerants with a goal of accelerating the replacement rate of the Class I refrigerant bearing devices, perhaps with ES&H funding.	\$2K (F, I) (review and modification task) \$25K/yr (R, B) (refrigerant replacement)
<i>Objective 2: To reduce generation of greenhouse gases.</i>	
During FY2002, evaluate at least two pre-existing office buildings for their potential to receive the EPA's Energy Star building label. For FY2003, complete design of two new office buildings that meet EPA Energy Star building standards.	Minimal
Update NETL's Comprehensive Energy Management Plan (by 9/30/02) to be consistent with DOE O 430.2X and Executive Order 13123.	Minimal
Continue in FY2002 to report energy consumption and its reductions in energy use to FEMP. (Note: NETL aims to exceed the goal of more than a 20% reduction in energy use by year 2005, compared to 1990 usage.)	Minimal
During FY2002, submit at least one new energy management retrofit project to FEMP for funding consideration. For FY2003, submit at least one additional new energy management retrofit project for funding.	Minimal
During FY2002, evaluate at least two applications for the use of off-grid generation (e.g., the use of a solar hot water heating system for the Child Development Center). Submit at least one off-grid generation system proposal to the FEMP for funding. For FY2003, submit to FEMP for funding at least one additional off-grid generation proposal.	Minimal
Prepare a plan for the acquisition of electricity from sources that generate less greenhouse gases. Implement the plan after DOE/HQ approves the plan.	Minimal (for plan preparation)
Continue to periodically post on the intranet messages regarding the need for employees to take personal responsibility for conservation of electricity.	Minimal
Continue to periodically educate employees with articles published in "NETL Plugged In".	Minimal

Proposed Near-Term (FY2002 and FY2003) Actions	Preliminary Costs
Begin to use credits for the purchase of landfill gas, as a substitute for natural gas.	Minimal
<i>Objective 3: To increase use of alternative fuels in vehicles.</i>	
During FY2002, when purchasing vehicles, procure all light-duty vehicles to include alternative fuel capabilities. (Note: NETL hopes to receive \$170K from DOE/HQ for the purchase of two quick-fill CNG stations in FY2002. This includes \$70K for the shipping and installation of one pre-existing facility from Pantex and \$100K for a new facility. The ES&HD is expected to provide \$25K for the purchase of two ethanol tanks and vehicle refueling devices).	\$195K (F, I) (Costs for quick-fill CNG stations and ethanol tanks/refueling devices -- currently being negotiated)
<i>Objective 4: To decrease air emissions of toxic compounds.</i>	
Create a list of hood vents, including the pollution control devices attached to the vents. Perform baseline monitoring on any vents found to be in use. (Monitor ~12 locations per site [MGN and PGH] with 4 samples per location per year. Sample using evacuated canisters with flow regulators that control the inflow for an 8 hour sample period [or equivalent air monitoring procedure]. Analyze VOCs in sample gases).	\$45K (F, I)
<i>Objective 5: To decrease air emissions from painting operation, including a reduction in emissions of volatile organic compounds (VOCs) by 50% by year 2005.</i>	
During FY2002, consider (through consultant's analysis) whether to install paint booths with VOC/aerosol treatment systems or whether to use offsite paint contractors (with smaller jobs performed under hoods).	\$3K (F, I) (consultant)

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Please also see: **Aspect 2 – Energy and Fuel Use** for additional information on this energy management aspect.

**Aspect 6 – Potential Exposure to Toxic Chemicals and Energy Releases (Improving Chemical Handling Facility and its Operations)**

*Statement of Aspect:* For a variety of reasons, NETL-PGH’ s chemical handling facility and its associated buildings may pose potential chemical exposure risks to employees and the local environment.

Addressing this aspect would result in decreased potential for toxic chemical exposures for employees and the surrounding environment. Working conditions would improve and the probability of accidents would be reduced.

**Objectives and Targets**

**Objective:** To decrease risk levels to the environment and to workers associated with chemical and / or energy releases (or potentials to release) from NETL’s chemical handling and dispensing facility / operations. Critical risk reduction strategies include facility upgrades; strict enforcement of the labeling policy for the chemicals; and full implementation of an inventory request system to determine if there are opportunities to reduce the quantities of unused / outdated chemicals on-site.

**Target:** Perform at least 2 significant facility and process “fixes” to chemical handling and dispensing facility / operations in FY2002 in order to lower risk levels by 2005

**POCs:** Colleen Butcher, Engineering Operations Division; Jody Meisner and John Bennati, EG&G and Don Wiczanski, Site Operations Division

**Action Plan**

<b>Proposed Near-Term (FY2002) Actions</b>	<b>Preliminary Costs</b>
Execute physical fixes to the canopy areas of Buildings 92 (4,179 ft <sup>2</sup> ) and 64 (2,739 ft <sup>2</sup> ) These costs are per building:	
Putting new roofs on these buildings – includes insulation of roof. (\$10.25/ft <sup>2</sup> )	\$120K (F,I)
Installing walls (blow-out) with windows to allow the natural light to enter - includes insulation of walls. (\$125/linear ft)	\$80K (F,I)
Installing a new HVACs in order to maintain a consistent temperature between 60 – 75°F.	\$105K (F,I)
Sealing the floors with a chemically impervious material. (Epoxy \$5/ft <sup>2</sup> )	\$220K (F,I)
Installing a garage door and new man doors to meet regulations and other requirement.	\$10K (F,I)

Proposed Near-Term (FY2002) Actions	Preliminary Costs
Purchase new, “specialized” drums, racks, and shelving (e.g., spark-proof racks and shelving, ferro-magnesium considerations).	\$150K (F,I)

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*Additional Information Related to Aspect Scope:*

*Facility Upgrades.* Other than a new chemical handling facility, enclosing and heating the canopy areas of Buildings 92 and 64 would help to eliminate the possibility of container contents being frozen and to reduce the potential for accidents occurring and drums being punctured.

Building 92, which is classified a Class I, Division II area, has been cited by NETL for improperly handling and storing chemicals. Waste drums and hazardous materials are stored in the canopy area of Building 92. These drums are exposed to the weather, resulting in temperature fluctuations. In the winter months, rain and snow accumulate in this area and freeze, causing a safety hazard for those that work in the area. Forklifts can slide on the ice, dislodging and puncturing the drums, resulting in chemical spillage. In addition, water-based chemicals freeze during the winter, compromising the integrity of the container or drum. Plastic can become more brittle and the storage drums can swell, possibly rupturing and exposing a hazard to employees and the environment. (The disposal of frozen drums can be significantly more costly.) During the summer months, drums that contain volatile chemicals can also swell. This is especially dangerous since most volatile chemicals also happen to be flammable. A volatile chemical under pressure is potential stored energy, with the potential for explosion. In addition, drums can corrode from the moisture in ambient outside air.

The canopy area of Building 64 (where flammables are stored, and where drums and glass are crushed) is also a concern in terms of the weather. (This building has been declassified to General Purpose.) Animals may nest in the canopy area. Leaves and rubbish blow into the area, requiring constant cleanup to prevent tripping hazard. Drum racks are corroding and need to be replaced.

*Chemical Inventory.* A barcode labeling policy is in place to track all chemicals brought onto the site in a “cradle-to- grave” manner. NETL uses the Quantum Facts system to barcode each chemical bottle or pack, and this information, in turn, is entered into the site inventory. However, there are issues that still need to be resolved (e.g., if the chemical is vacuum packed in foil and then removed from the pack by a researcher, the researcher needs to be able to move the barcode from the pack to the bottle so that the chemical remains “traceable”).

A quarterly inventory request to review the status of chemicals stored in Building 64 is currently in place, but there is no procedure in place to review the status of unused/outdated chemicals stored in the

laboratories. There are many outdated chemicals on-site that do not have potential for use in a research environment, but require appropriate disposal.

The cost to support this effort would be minimal, with a slight increase in man-hours. Implementing a formal procedure to encourage laboratory researchers to reduce chemical inventories in their labs would require a moderate number of man-hours.

*Chemical Labeling.* Personnel unfamiliar with the procedure for disposition of wastes occasionally leave unlabeled toxic chemicals and materials at the Chemical Handling Facility. As a result, employees that handle the disposition of these wastes cannot always be certain of the toxicity of the wastes they are handling.

**Aspect 7 – Understanding of Surface Water and Storm Water Discharge Impacts**

*Statement of Aspect:* The impact on surface water at NETL is considered significant due to an unknown source of volatile organics in the storm water runoff sewer lines and an incomplete knowledge of all potential sources of spills to surface water.

**Objectives and Targets**

**Objective:** To better understand the impacts of NETL and nearby off-site activities on surface water/storm water resources.

**Target:** By 2003, conduct investigations to better understand the “potential” of NETL’s activities (e.g., leaching from chemical and material storage areas; spills; transformer releases; leaks from condensate lines; discharges from fuel storage operations, residual fuel in vessels, and fuel dispensing) to impact surface water and storm water resources.

**POCs:** Bruce Webster, Mike Hospodar and Rodger Dotson, ES&H Division.

**Action Plan**

<b>Proposed Near-Term (FY2002) Actions</b>	<b>Preliminary Costs</b>
Review existing information for on-site and nearby sources of pollution to surface water. Conduct a thorough inspection of the sites to update this information. Conduct qualitative analysis to determine the potential impact on surface water. Determine if mitigation efforts would be warranted for any of the identified potential sources.	\$20K (F, B) \$10K (F, I)
Monitor volatile organics in manholes: Identify locations that would best determine sources of the organics. Prepare to sample these locations with a photo-ionization detector during the next incident.	\$10K (F,I)
In FY2003, implement necessary mitigations for identified potential sources. This effort may involve procurement of supplies; costs would depend of the number and type of mitigation efforts involved.	TBD

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*Additional Information Related to Aspect Scope:*

A Storm Water Pollution Prevention Plan and Spill Prevention, Control, and Countermeasure Plan have been generated for Morgantown and Pittsburgh sites, which document the storm water collection system and potential sources of pollution.

Periodically, volatile organics have been found in the storm water collection system. The source is unknown.

**Aspect 8 – Raw Materials Usage (“Green” Purchasing)**

*Statement of Aspect:* Activities at NETL, as well as those at many government research facilities, consume a significant quantity of raw materials each year. Executive Order 13101, *Greening of the Government Through Waste Prevention, Recycling, and Federal Acquisition*, requires purchasing EPA-designated items with recycled content to lessen the impact of virgin raw material use. Reducing raw materials usage will encourage the recycling industry. In addition, addressing this aspect directly coincides with NETL’s environmental policy and its focus on waste minimization.

**Objectives and Targets**

**Objective:** To purchase EPA-designated items with recycled content at NETL

**Target:** Increase purchases of EPA-designated items with recycled content to 100% by 2004.

**POCs:** Debbie Boggs, Bob Mohn and Tom Gruber, Acquisition and Assistance Division; Rita Hearn, PACE

**Action Plan**

<b>Proposed Near-Term (FY2002) Actions</b>	<b>Preliminary Costs</b>
Revise online versions of NETL-MGN and NIOSH-PGH storeroom catalogs so that both are in same format, and as such are more user-friendly. Add column/search function to MGN catalog that allows users to easily locate items manufactured with recycled content. Encourage DOE personnel to obtain recycled content items from warehouse rather than new items from offsite vendors.	\$10K (F, I)
Review purchase of disposable cafeteria items. Substitute items manufactured with recycled materials where possible.	\$3K/yr (R, I)
Issue a comprehensive directive on affirmative procurement with provisions for credit card compliance spot checks.	\$2K (F, B)
Develop and provide on-site computer-based training related to purchasing items of recycled content.	\$10K (F, I)
Explore the feasibility of putting a block on credit card purchases of non-recycled content items when the same items that are manufactured from recycled material are available either from the storeroom or a vendor.	\$8K (F, I)

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*Additional Information Related to Aspect Scope:*

NETL reports Comprehensive Procurement Guidelines (CPG) purchases of \$10,000 or greater on an annual basis.

All GSA items meet Executive Order 13101 requirements, and therefore, are in compliance with the DOE mandates related to buying items with recycled content.

NETL has identified a Greening Acquisition Advocate (GAA). The GAA distributes information on recycled products to all NETL employees and contractors.

Buying recycled products may be costly in the short term, however, when using virgin materials, disposal costs are not always considered. Based on the life-cycle costs of the product, it is actually less costly generally to purchase recycled materials. Addressing the costs and appropriateness of using recycled items requires development of an educational program for all employees on the Comprehensive Procurement Guidelines and benefits of using recycled materials will require time.

*Credit Card Purchases.* A large percentage of NETL's purchases are made by credit card, but many of the credit card holders are not completely familiar with the recycling purchasing requirements. The type of material purchased can be tracked, but it is currently impossible to track whether the materials contain recycled materials.

The list of items with recycled content is distributed to credit card purchasers as guidance. Employees can find information on purchasing items with recycled content in "Plugged In" articles, the credit card handbook, and NETL Procedure 541.2-1.

The current small purchasing system does not have the capability to identify recycled purchases. There is no mechanism in place to track **what** are recycled purchases.

A moderate amount of man-hours may be necessary to help credit card purchasers become familiar with locating items that will meet the specifications of the government mandate. A training program for credit card purchases would require minimal costs, but moderate effort.

**Aspect 9 – Off-Site Noise Generated Onsite**

*Statement of Aspect:* Noise generated by NETL can impact its neighbors in the local communities. Grounds keeping, tree removal, construction activity, OST operations, and alarms are typical sources of noise extending off-site. Though the DOE has not mandated specific noise pollution standards, NETL intends to reduce its “fence line” noise levels. NETL’s target will be to maintain off-property noise levels for normal operations below local ordinance standards 100% of the time. The cost and effort required to measure relevant noise levels and to institute controls should be minimal. By reducing property line noise levels, NETL will minimize the impact on its neighbors and maintain its standing in the surrounding community.

**Objectives and Targets**

**Objective:** To reduce “fence line” noise levels attributable to NETL (e.g., grounds keeping and R&D operations).

**Target:** Noise levels reduced at fenceline under normal conditions to below local ordinance standards 100% of the time by 2004.

**POCs:** Alan Wells and Randy Moore, EG&G; Mark Lentz, SAIC, and B. J. Jackim, DOE.

**Action Plan**

<b>Proposed Near-Term (FY2002) Actions</b>	<b>Preliminary Costs</b>
Conduct four (4) baseline noise surveys at perimeters of Pittsburgh and Morgantown sites:	
One (1) noise survey under normal noise conditions during the day (per site).	\$4.8K (F, I)
One (1) noise survey under normal noise conditions at night (per site).	\$4.8K (F, I)
Two (2) noise surveys during high-noise operations (per site).	\$9.6K (F, I)

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*Additional Information Related to Aspect Scope:*

- C Morgantown and South Park Townships have noise ordinances.
- C Most recent noise complaints from the community were over five years ago for each site. Each involved an ongoing operation (e.g., bag house exhaust fan at Building 141).
- C Gas alarms at Pittsburgh R&D plateau and site alarms are not perceived to be a problem.

- C Demolition and construction planned for Pittsburgh site have potential to affect recently constructed homes near the fence line.
- C Recently constructed Process Demonstration Unit (PDU) in Morgantown has potential to generate high noise levels.

## **Aspect 10 – Non-Industrial Land Use**

*Statement of Aspect:* NETL owns and manages on-site non-industrial lands of ecological significance that should be conserved and enhanced. Management of this aspect would demonstrate NETL's commitment to environmental stewardship, enhance community relations, and increase the quality and value of non-industrial land. Because new facilities are tentatively planned for Morgantown and Pittsburgh sites, conservation and enhancement of non-industrial land will require prudent planning during these renovation activities.

### **Objectives and Targets**

**Objective:** To conserve and enhance NETL's "non-industrial" land by maintaining or increasing the percentage of land used for non-industrial purposes, and increasing the quality of non-industrial land over time in terms of ecological benefit, utility, and diversity.

**Target:** Perform a feasibility study to identify and evaluate the best options for land use and improvements.

**POC's:** Tom Torkos, OBL; Don Wieczenski, Site Operations Division, and Angela Cooper, ES&H Division

## Action Plan

Proposed Near-Term (FY2002) Actions	Preliminary Costs
<p><i>Assemble Project Team.</i> Assemble a project team to complete project tasks. The team will be chaired by Thomas M. Torkos, Associate Director, Office of Business and Logistics. This team could also include the services of an off-site “architect” to better identify or evaluate optimal land use projects.</p>	<p>\$25K (F, B) \$35K (F, I)</p>
<p><i>Identify Appropriate Stakeholders.</i> To ensure the success of this project, identify appropriate stakeholders and devise a means to seek their input. NETL already has in place contacts with some local community groups, and this could serve as a starting point.</p>	<p>(to perform feasibility study as outlined below)</p>
<p><i>Identify Specific Projects.</i> Working with internal and external resources and stakeholders, identify and investigate the feasibility of various land enhancement projects* for the NETL sites, such as:</p> <ul style="list-style-type: none"> <li>C Preservation of wetlands</li> <li>C Preservation/development of wildlife habitats</li> <li>C Areas for educational and recreational activities</li> <li>C Protection of threatened and endangered species</li> <li>C Land management to reduce erosion</li> <li>C Controlled access areas for public recreation</li> <li>C Leasing land to local municipalities for recreational use</li> <li>C Establishment of a wellness park for employee use.</li> </ul>	
<p><i>Identify Associated Costs/Benefits.</i> Develop rough-order-of-magnitude (ROM) costs for each proposed land enhancement project, along with a cost/benefit analysis.</p>	
<p><i>Final Report.</i> Generate a final report that documents the activities performed in above tasks.</p>	

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\* Similar projects have been instituted by other government and private sector organizations and could provide valuable lessons learned information:

- C Oakridge National Laboratory, Oakridge, Tennessee, has incorporated a variety of environmental and educational programs into its formal Land and Facilities Plan.
- C Nova Chemicals, Chesapeake, Virginia, has set aside 11.5 of its 60 acres for a habitat for migratory

birds and other wildlife. The one-time cost was about \$8,000 to plant 24 species of trees and fruit-bearing shrubs. The unanticipated yearly savings is \$16,000, which is what it previously cost the facility to mow the 11.5 acres.

*Additional Information Related to Aspect Scope:*

Land enhancement projects could be developed in cooperation with local universities and schools, which would greatly increase the program's level of positive impact. West Virginia University in Morgantown has both undergraduate and graduate programs in Agricultural and Environment Education. In addition, their Extension Services support a variety of programs including Agricultural Engineering, Horticulture/Gardening, Forestry and Wood Products, Youth in Agriculture, and Wildlife Resources. The possibility exists to support an undergraduate / graduate program to develop land enhancement projects and perhaps to further develop the project into a training program for local schools. The Morgantown site plans to eliminate trailers currently being used as laboratory and office space, which could possibly be turned into areas to be set-aside for land enhancement projects.

The possibility of obtaining grants for program development also exists. The EPA has an Office of Environmental Education whose missions is "to advance and support education efforts that develop an environmentally conscious and responsible public." Similar grants are also available from other sources. Grants could be sought by NETL or through local universities and/or schools, other stakeholders, or the local community, depending on the scope and purpose of the program.