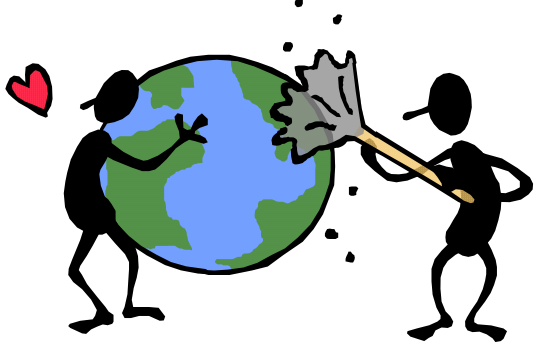
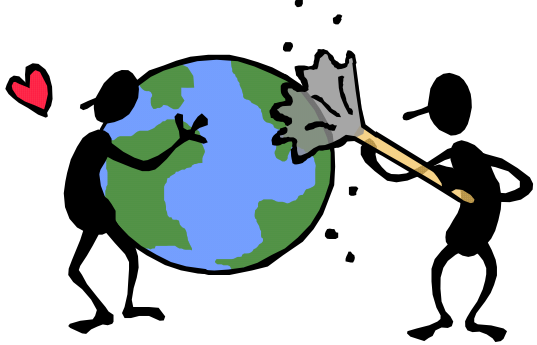


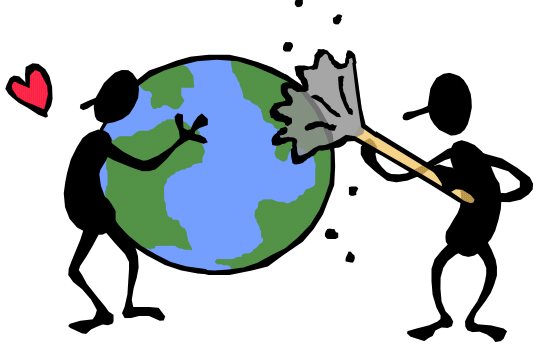
# Environmental Aspect/Impacts

**Suzanne W. Sessoms, P.E.**
**Environmental Mgmt. Services**
**(910) 520-3641 phone** **emsnc@yahoo.com**
**(910) 686-1525 fax** **http://emsnc.tripod.com/ems/**



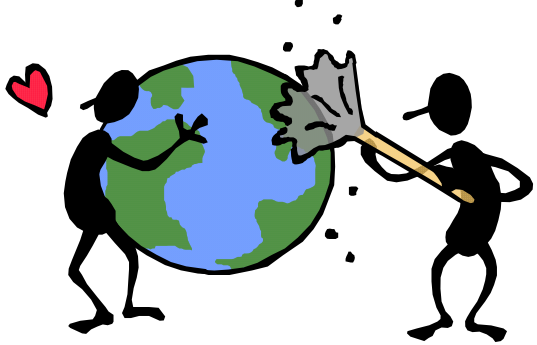
# Environmental Aspects

**Environmental aspects are the building blocks of your EMS!!**



# Aspect Identification - a critical path step

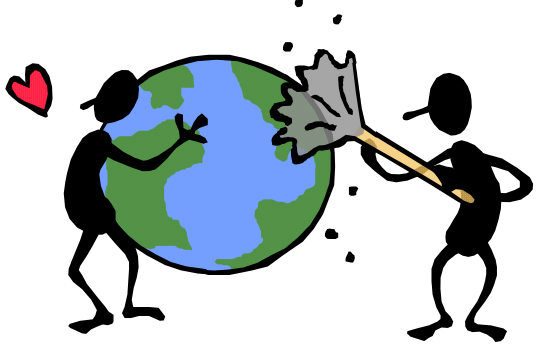
- **Identify and prioritize significant aspects and impacts**
- **Set improvement objectives, targets, and corresponding programs**
- **Manage your significant aspects and impacts**
  - **Operational control**
  - **Monitoring and measurement**
- **Document your system**
- **Train employees**
- **Design and implement an internal EHS MS review program**
- **Design and implement a corrective action system**
- **Conduct a management review**



# ISO14001 Requirement

**ISO14001 requires:**

- "the organization shall establish and maintain a procedure to identify the environmental aspects of its activities, products and services that it can control and over which it can be expected to have an influence, in order to determine those which have or can have significant impacts on the environment"



# What is involved?

## Processes to be evaluated

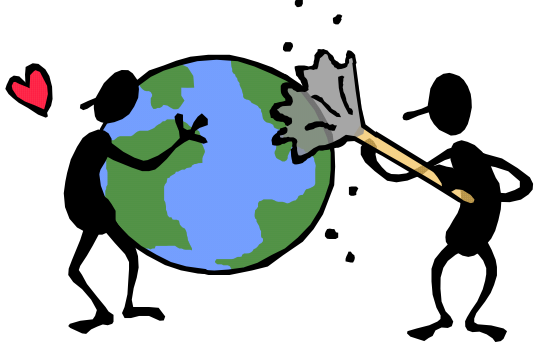
- Chemical handling
- Recycling
- Wastewater treatment
- Suppliers
- Products

## Significance criteria

- Environmental consequences
- Regulatory implications
- Concerns of interested parties

## Consequences of significance designation

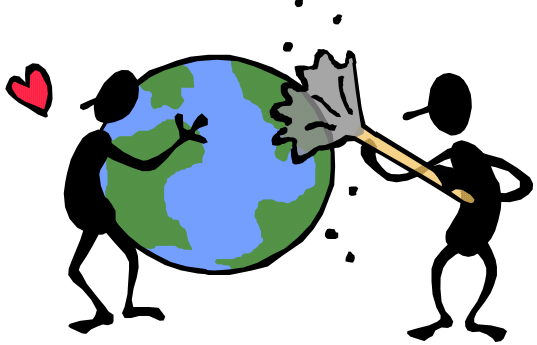
- Consider improvement
- Operational control
- Monitoring and measurement
- Employee awareness



# Identify Activities, Products and Services

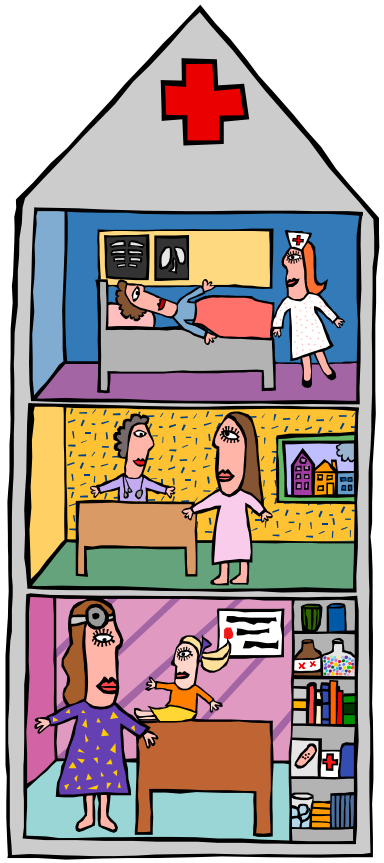
- Identify activities that the organization controls or influences
- What does control and /or influence mean?
  - fiscal control
  - organization control
  - contractual control
- Don't forget to evaluate the aspects of your product
  - packaging
  - energy use

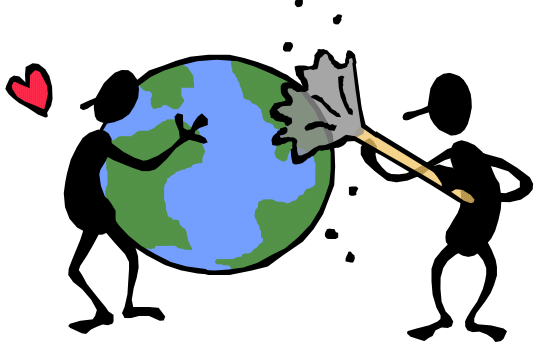
- Activities may include:
  - commuting
  - on-site activities
    - manufacturing
    - office
    - maintenance
  - contracted activities
    - cafeteria
    - janitorial
    - landscaping
  - supply chain
    - transportation
    - containers



# Activity Identification Workshop

- **Using a hospital as the organization, let's brainstorm some of the on-site and contracted activities that would need to be evaluated**



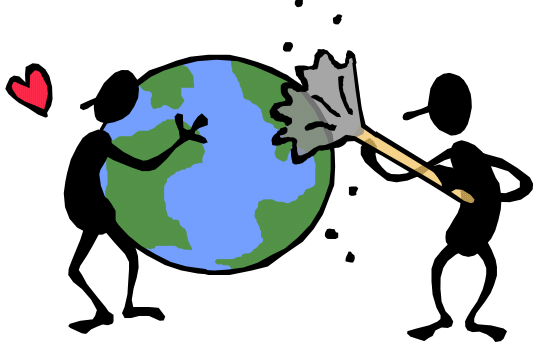


# Next Steps

- Identify the environmental aspects
- Identify the environmental impacts
- Evaluate significance
- Consider improvement
- Manage the significant aspects

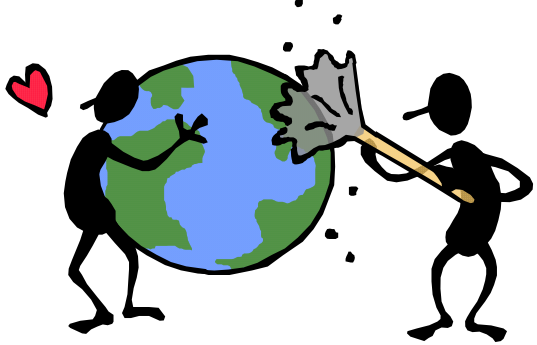
# What is an environmental aspect?

- **ISO14001 defines an environmental aspect as an:**
  - "element of an organization's activities, products or services that can interact with the environment"
- **Aspects can be**
  - **regulated or non-regulated**
  - **natural or man-made**
  - **positive or negative**
  - **controlled or influenced by the organization**



# Examples of Aspects

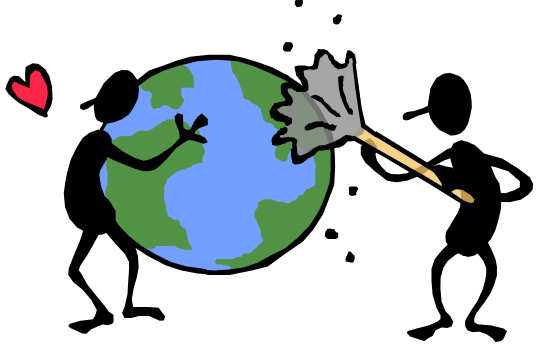
- **Inputs**
  - Traffic
  - Chemicals
    - corrosives
    - flammables
    - toxics
    - contained gases
  - Resource use
    - energy
    - water
- **Outputs**
  - Wastewater
  - Fumes (air emissions)
  - Solid waste
  - Hazardous waste
  - Noise
  - Traffic



# Environmental Impacts

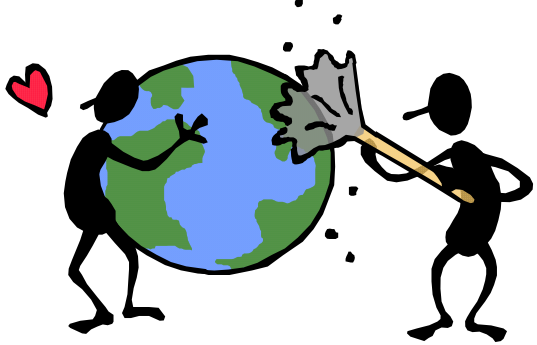
**ISO14001 defines environmental impact as:**

- **"any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services"**



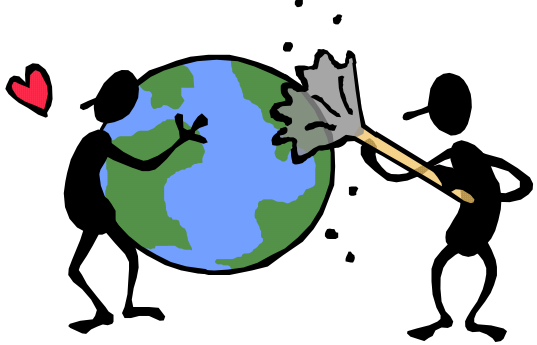
# Define “Environment”

- ISO14001 defines the environment as:
  - **“surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation**
  - **NOTE: Surroundings in this context extend from within an organization to the global system.”**



# Examples of Impacts

- General
  - depletion of natural resources
  - destruction of habitats
- Water
  - pH
  - oxygen level
  - toxicity
- Air
  - air toxicity
  - smog
  - global Warming
  - ozone Depletion



# Aspect/Impact Identification Workshop

| Aspect | Media | Impacts |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

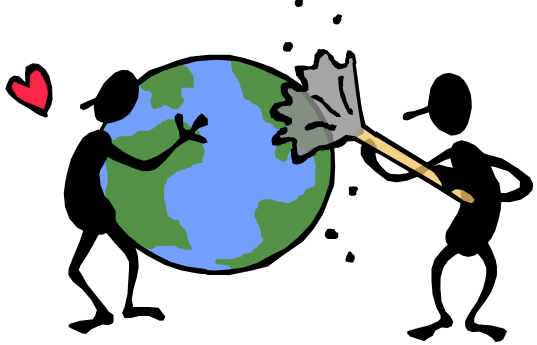
- **Pick an activity**
- **Brainstorm for the inputs and outputs of that activity**
  - **consider the following:**
    - raw materials
    - consummables
    - utilities
    - machinery
    - man-power
  - **the inputs and outputs are the aspects**
- **Then brainstorm for the impacts of each aspect**

# Who should determine your significant aspects and impacts?

**YOU!!!**

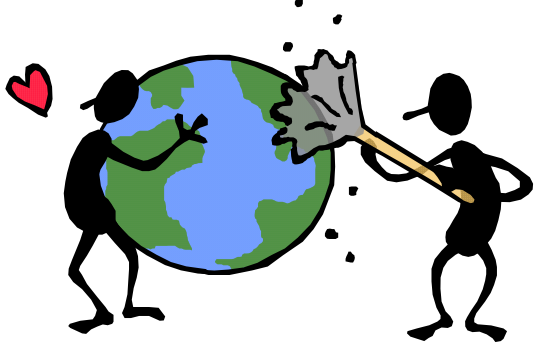
- You know your process
- You know the environmental consequences
- You know your business requirements

- **The organization sets its own criteria for significance**



# Significance Criteria

- Many different techniques
  - qualitative
  - quantitative
  - combination
- Criteria varies
  - environmental consequence
  - regulatory issues
  - community concerns

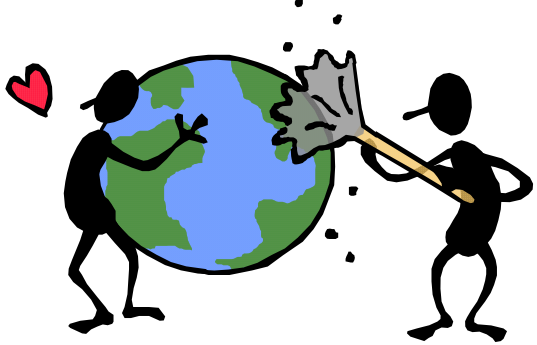


# Qualitative Analysis -
## Any yes means significant

***Inputs to product, activity, or service***

- Uses prohibited or listed material (SARA/TRI)
- Uses large amounts of water, energy, natural gas, other fuel
- Hazard to personnel, company from storage, etc.
- Uses large quantities of chemical additives
- Use of materials of local interest (regulated, beneficial usage, etc.)

→ Significant



# Qualitative Analysis -
## Any yes means significant

***Outputs to product, activity, or service***

Significant discharge to air, water, or soil (quantity or type)

Special hazard of materials (regulated waste, other remark)

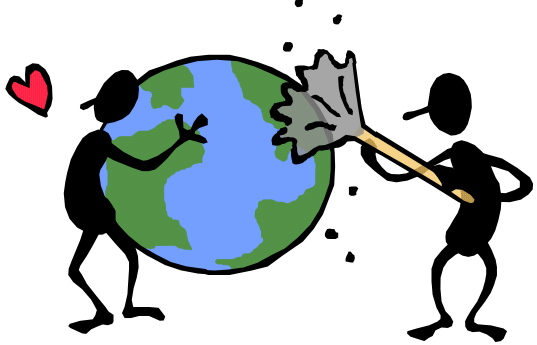
Special hazard to personnel (general safety or injury potential)

Large quantities of waste generated (hazardous, oils, chemical waste, etc.)

Metal or electronic waste (not recovered; wasted resource)

Waste sent for incineration or disposal that has other feasible options

→ Significant



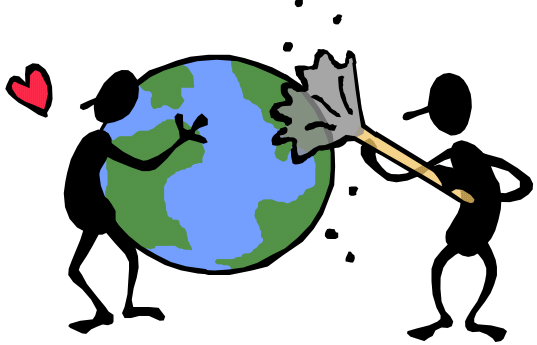
# Quantitative Significance Criteria

- Review examples on web-site
  - DPPEA
  - Dames & Moore
  - Env. Mgmt. Services
- Beware of meaningless formulas
- Make sure positive impacts can become significant

# City of Gastonia Wastewater Treatment

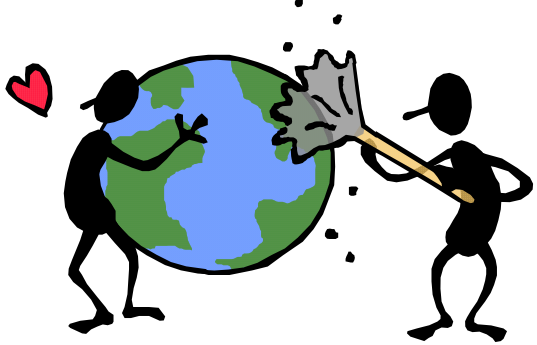
- Team included representatives from both treatment plants
- Three month effort
- Procedure included qualitative analysis with final management decision

- Aspects included:
  - **metals**
  - **laboratory waste**
  - **fecal material**
  - **chlorine**
  - **oil and grease**
- Case study - **http://www.p2pays.org/ref/12/11403.pdf**
- Procedures - **http://www.p2pays.org/ref/13/12203.pdf**



# Another Example

- This example is from Lucent Technologies
- Their approach starts with aspect categories, instead of activities
- Their aspect identification is quite extensive
- Their significance criteria is a bit cumbersome



# Identifying Environmental Aspects

I Energy Consumption
II Water Consumption
III Chemical Consumption
IV Raw Material & Components
V Supplies
VI Air Emissions
VII Waste
VIII Water Discharge
IX Product
X Land Use
XI Community Interactions

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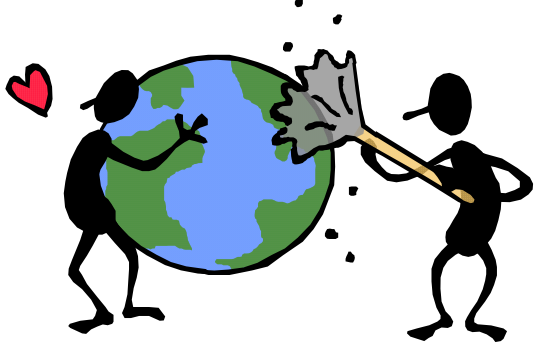
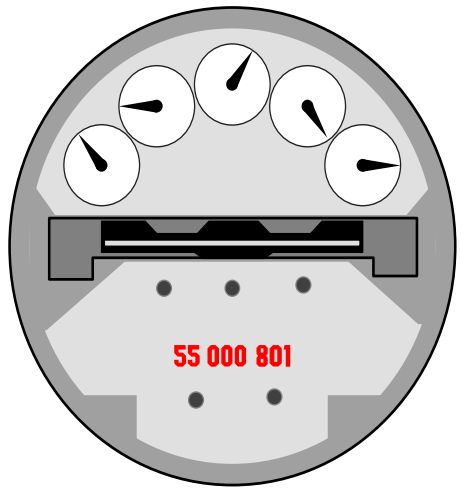
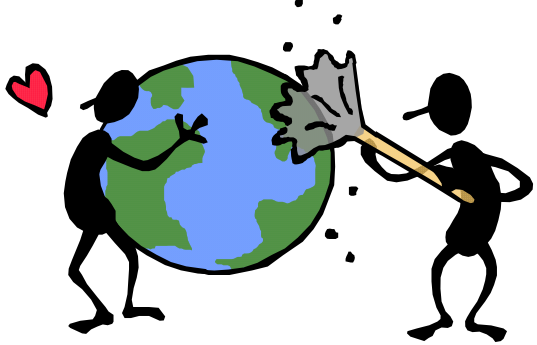


# Environmental Aspects

## *I. Energy Consumption*

- **Electricity**
- **Fuel Oil**
- **Natural Gas**
- **Gasoline**
- **Other Fuel**
- **Purchased Steam**
- **Purchased Chilled Water**
- **Propane**
- **Coal**
- **Photo-cells**

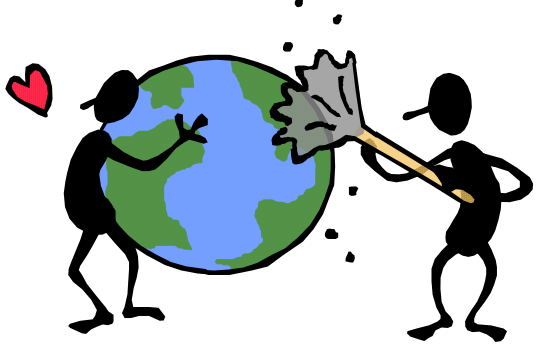




# Environmental Aspects

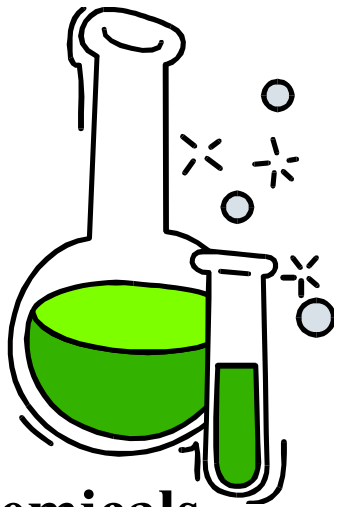
## *II. Water Consumption*

- **Site-owned Sources**
- **Municipal or Private Sources**
- **De-ionized Water**
- **Bottled Water**
- **Other Sources**

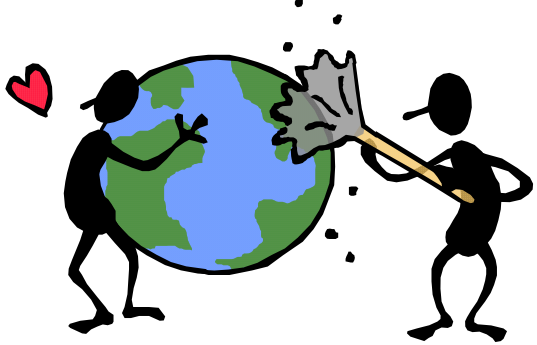


# Environmental Aspects

## *III. Chemical Consumption*



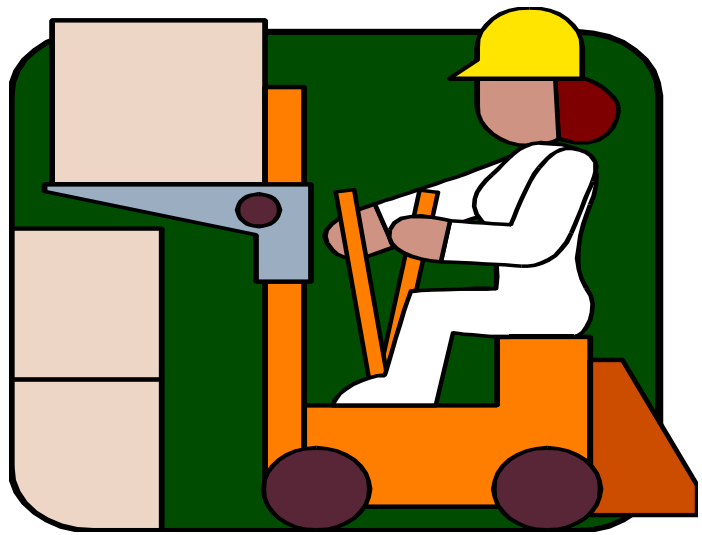
- Corrosives (acids, bases)
- Solvents
- Adhesives
- Inks
- Fluxing Agents
- Compressed Gases
- Oxidizers
- Paints
- Resins
- Cryogenics
- Solder Products
- Photographic Chemicals
- Water Treatment Chemicals
- Petroleum-based Products
- Maintenance Supplies
- Pesticides, Fertilizers

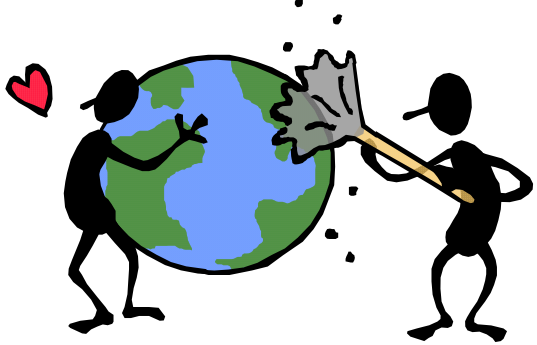


# Environmental Aspects

## *IV. Raw Material and Components Consumption*

- **Silicon**
- **Metals**
- **Piece Parts (electronic components, circuit boards, semiconductor wafers)**
- **Batteries**
- **Wire/Fiber Plastics**
- **Packaging**
- **Pallets**
- **Unusual Materials**

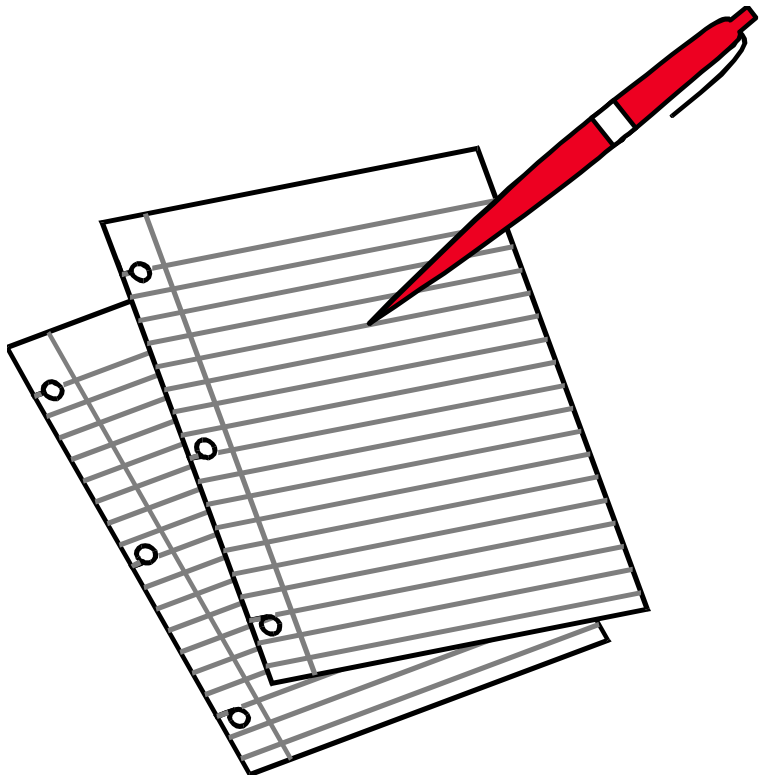


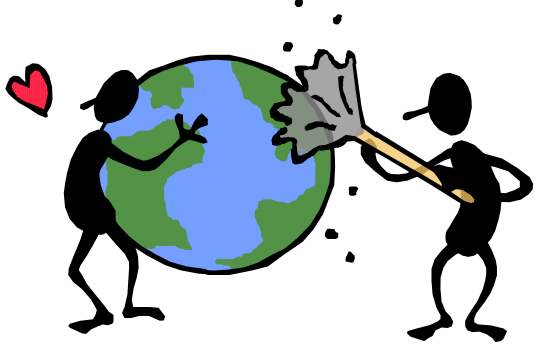


# Environmental Aspects

## *V. Supplies*

- **Office Paper**
- **Computer Paper**
- **Janitorial Paper**
- **Food**

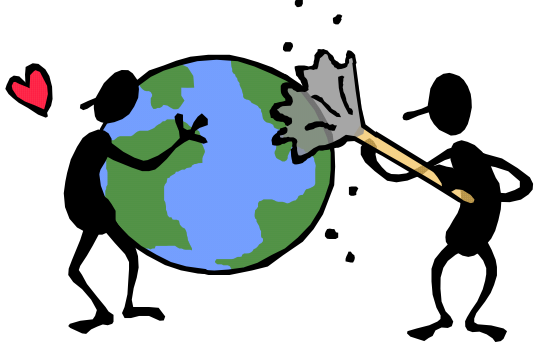




# Environmental Aspects

## *VII. Waste*

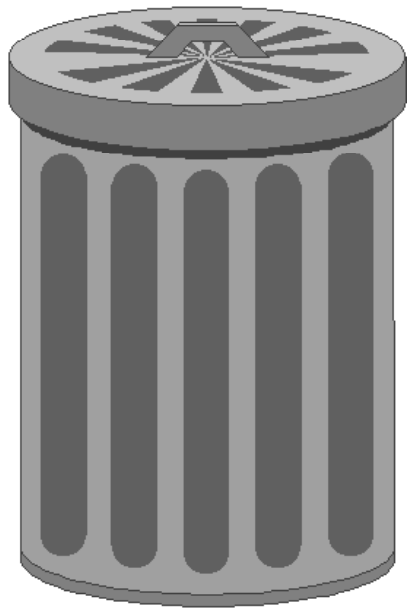
- Concentrated Corrosives
- Solvents
- Adhesives
- Inks
- Solder/lead Wastes
- Oxidizers
- Paint/Paint Related Waste
- Photographic Chemicals
- Waste Treatment Sludge
- Contaminated Soil
- Debris
- Batteries
- Mercury-containing Wastes
- Lab Packs
- PCBs
- Asbestos
- Petroleum Waste
- Hazardous Waste Solids
- Hazardous Waste Liquids
- Other Mixtures

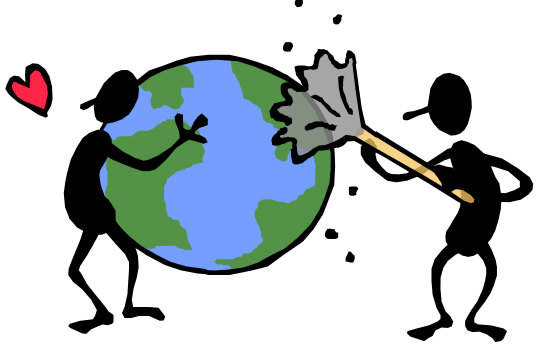


# Environmental Aspects

## *VII. Waste*

- **Automotive Wastes**
- **Pesticides, Fertilizers**
- **Biomedical/infectious Waste**
- **Paper**
- **Cardboard**
- **Equipment**
- **Radioactive Wastes**
- **Refuse**
- **Wood/pallets**
- **Activated Carbon**
- **Cafeteria Waste**

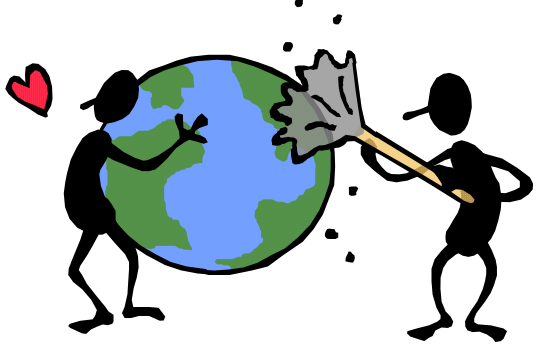




# Environmental Aspects

## *VIII. Water Discharge*

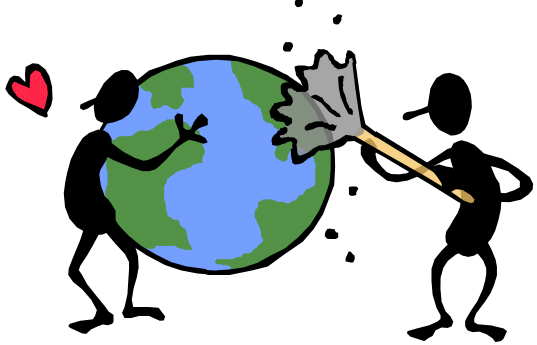
- **Sanitary**
- **Industrial Pretreatment**
- **Stormwater**
- **Thermal Loading**



# Environmental Aspects

## *IX. Product*

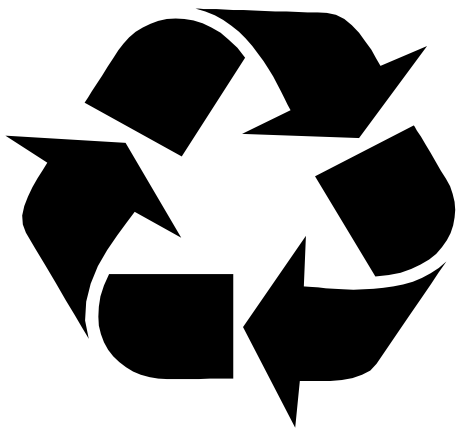
- **Manufactured Items**
- **Energy Consumption in Use**
- **Toxic Material Content**
- **Recycled Content**
- **Upgradability**
- **Emissions During Use**
- **Use of Consumables During Use, Maintenance, etc.**
- **Quantity (weight/volume)**
- **Packaging and Shipping Materials**
- **Reusability**
- **Recyclability**
- **Recycled Content**
- **Toxic Material Content**
- **Material Diversity**
- **Biodegradability**



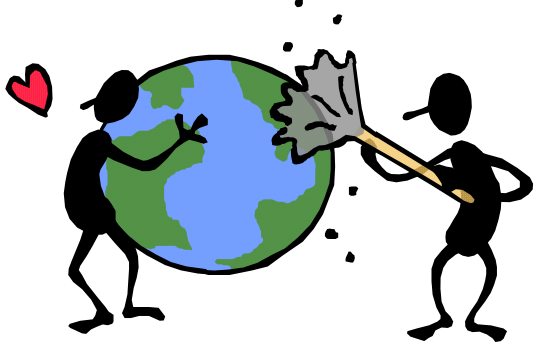
# Environmental Aspects

## *IX. Product*

- **Transportation**
- **Mode/distance**
- **Energy Use**
- **Emissions**



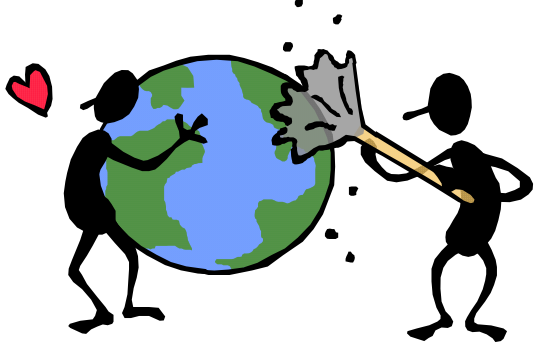
- **End of Life Management**
- **Reusability**
- **Recyclability**
- **Hazardous/toxic Material Content**
- **Material Diversity**
- **Upgradability**
- **Waste Classification**
- **Assembly/disassembly techniques**
- **Disposal/emissions**



# Environmental Aspects

## *X. Land Use*

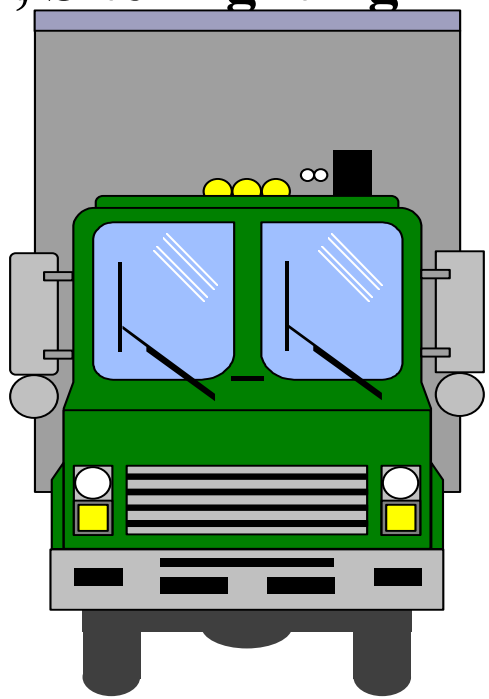
- **On-site Storage/containment/distribution/handling of Solids, Liquids, Gases**
- **Interactions with natural surface or ground water on the property; wetlands**
- **Cooling Tower Operation**
- **Thermal Emissions**
- **Maintenance Activities**
- **Soil Erosion**
- **Release of Pesticides, Fertilizers, etc.**
- **Remnants of past activities at the site (e.g., soil contamination)**

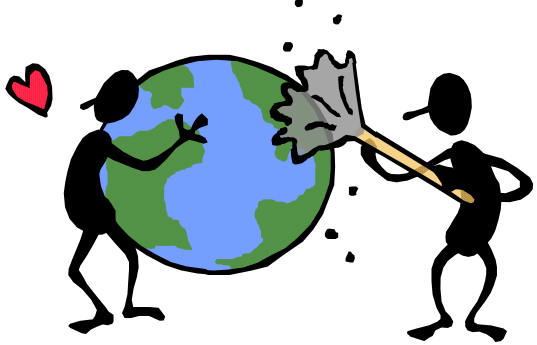


# Environmental Aspects

## *XI. Community Interactions*

- **Noise, Odor, Vibration, Heat Generation, Site Lighting**
- **Employee Commuting**
- **Trucking In and Out**
- **Dust Generation**
- **Electromagnetic Frequency Releases**
- **Recycling and Recovery Operations**
- **Appearance (Visual Impact) and Housekeeping**





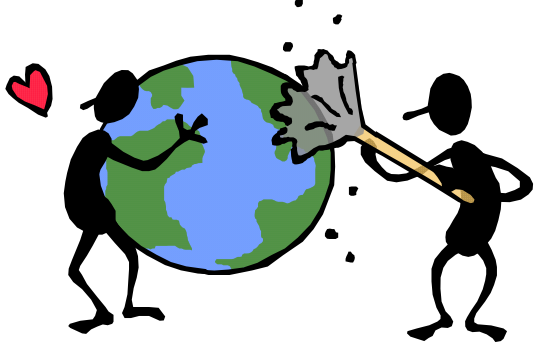
# Aspects Evaluation

## *Evaluation Categories*

1. Direct and Indirect Discharges, Exhausts and Emanations

2. Consumed Natural Resources

3. Community Impacts



# Determining Significance

1. **Discharges and Emissions -- 10 Criteria**
2. **Consumed Natural Resources**
3. **Community Impacts**

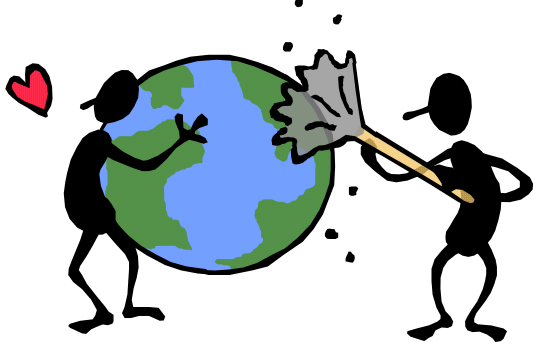
| | ***Maximum Pts.*** |
|---|---|
| *There are **8** criteria reflecting* ***Potential for Adverse Impact or Non-Compliance*** | ***80*** |
| *There are **2** criteria reflecting* ***Significance Based on Performance*** | ***200*** |

# Determining Significance

**a) The aspect is subject to a Legal or Other Requirement.**

*Legal: Lead wastes are hazardous wastes under the Resource Conservation and Recovery Act (RCRA).*

| Rating Category | Criterion Value |
|---|---|
| Subject to legal requirements which are complex and resource intensive to satisfy. | **10** |
| Aspect subject to legal requirements which are not complex and not resource intensive. | 5 |
| Aspect not subject to legal requirements, but subject to other requirements. | 5 |
| Aspect subject to no legal or other requirements. | 0 |

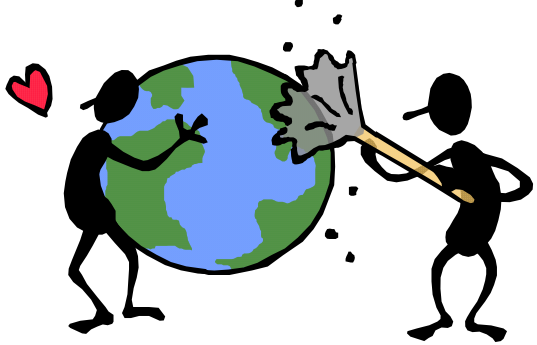


# Determining Significance

**e) The aspect poses an actual or potential risk to the environment.**

*Risk: Lead wastes are potentially harmful to human health and the environment if improperly disposed.*

| Rating Category | Criterion Value |
|---|---|
| Significant | **10** |
| Minimal | 5 |
| None | 0 |

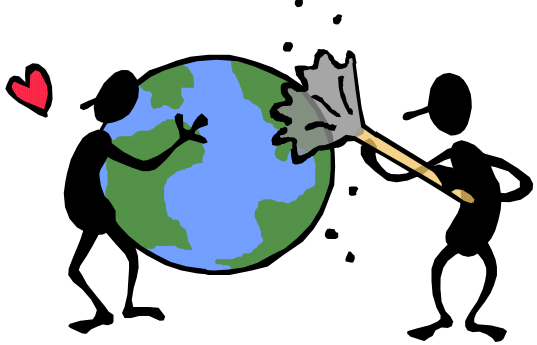


# Determining Significance

**f) The aspect is the subject of adverse legal, regulatory, or audit/inspection findings (whether internal or external).**

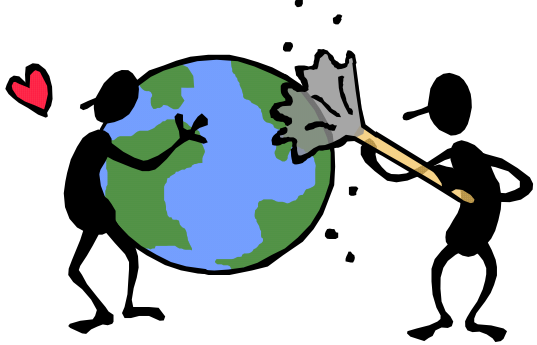
Yes.

| Rating Category | Criterion Value |
|---|---|
| **Legal or regulatory** finding with **substantial** potential or actual financial or public image consequences. | 100 |
| **Legal or regulatory** with **moderate**…… | 50 |
| **Regulatory agency inspection** with **substantial**…… | 50 |
| **Internal compliance audit** finding with **substantial**…… | 40 |
| **Regulatory agency inspection** finding with **moderate**…… | 25 |
| **Legal or regulatory** finding with **low**…… | 20 |
| **Internal compliance audit** finding with **moderate**…… | 20 |
| **Regulatory agency inspection** finding with **low**…… | 0 |
| **Internal compliance audit** finding with **low**…… | 7 |



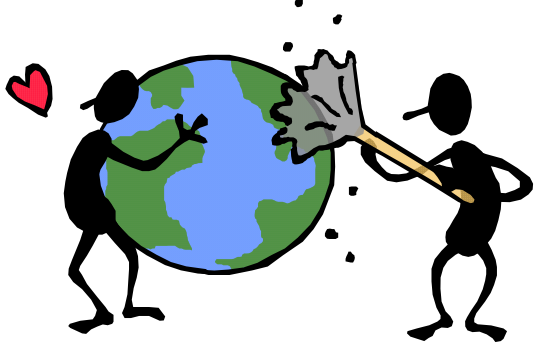
# Determining Significance

| 1. | Discharges/Emissions | Score |
|---|---|---|
| a) | Legal and regulatory….. | 10 |
| e) | Potential risk…… | 10 |
| f) | Adverse finding…… | 100 |
| | Total | 120 |
| **2.** | **Natural Resources** | **50** |
| | **Grand Total** | **170** |



# Use of Examples

- When it comes to implementation
  - **Adapt, don't adopt!!!!**
- When it comes to procedures
  - **Keep them simple!!**



# Ensure Success

## Define your methodology

## Select team facilitator(s)

- Strong team skills
- Respected by peers
- Knowledgeable

## Involve multi-functional team

- Ask managers to identify candidates with specific competencies
- Consider different teams for different activities
- At a minimum, validate the aspect/impact identification and significance scoring with representatives from the respective operations
- Keep information up-to-date