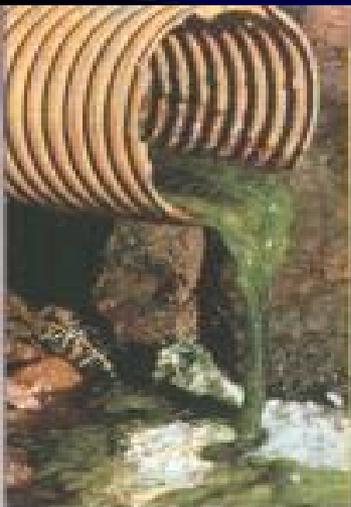




# Office of Environmental Quality Environmental Management System

## Module 2

# Environmental Aspects & Impacts



# Objectives

- Define the terms: Environment, Aspects, and Impacts
- Review the NCDOT Aspects and Impacts procedure, and the Aspects and Impacts Matrix Form
- Identify Environmental Aspects and Impacts
- Rank identified environmental Aspects and Impacts
- Determine the frequency of an Aspect
- Identify those Aspects that are significant
- Complete the Aspects and Impacts Matrix Form
- Understand where significant Aspects fit in your EMS



# Environment

ISO14001 defines the environment as:

**Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation.**



# Environmental Aspects

Environmental Aspect is an organization's activities, products or services that can interact with the environment. There are two types of environmental aspects:

- **Direct Environmental Aspect** - Activities over which a company can be expected to have an influence and control. For example, emissions.
- **Indirect Environmental Aspect** - Actual or potential activities over which the organization can be expected to have an influence on , but no control over. For example, supply chains, customer controlled aspects, aspects managed elsewhere within the same company.



# Environmental Aspects

can include:

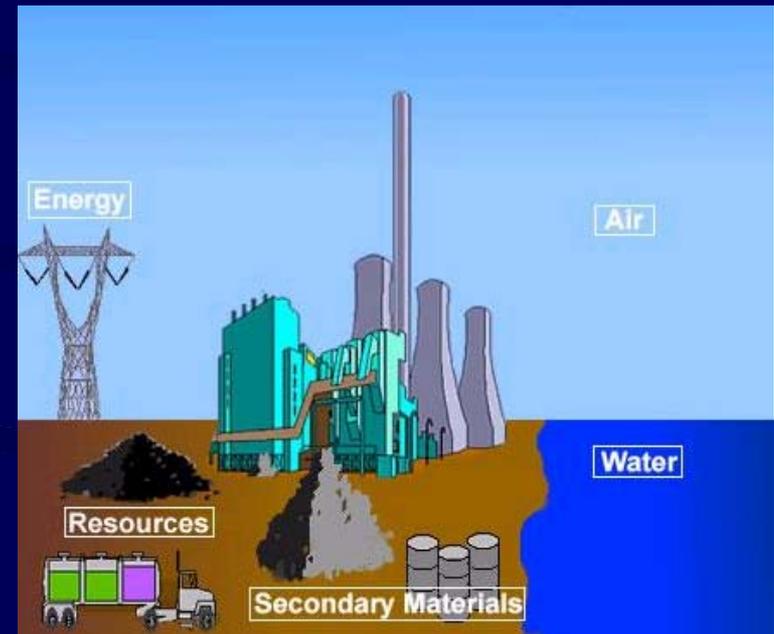
Land Use

Energy Consumption

Water Consumption

Waste

Community Interactions



# Examples of Aspects

## Land Use

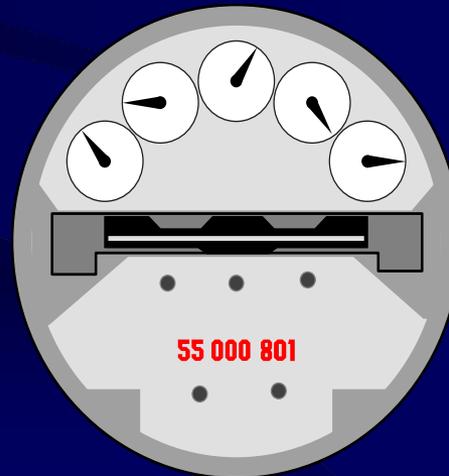
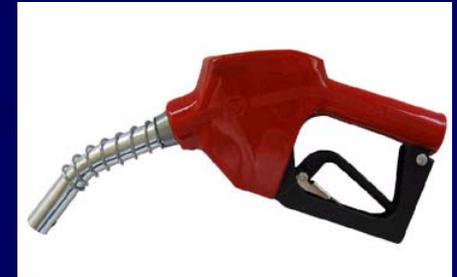
- On-site storage/containment/distribution/handling of solids, liquids, gases
- Interactions with natural surface or ground water on the property or wetlands
- Maintenance activities that disturb the earth
- Soil erosion
- Release of pesticides and fertilizers
- Remnants of past activities at the site (e.g., soil contamination)



# Examples of Aspects

## Energy Consumption

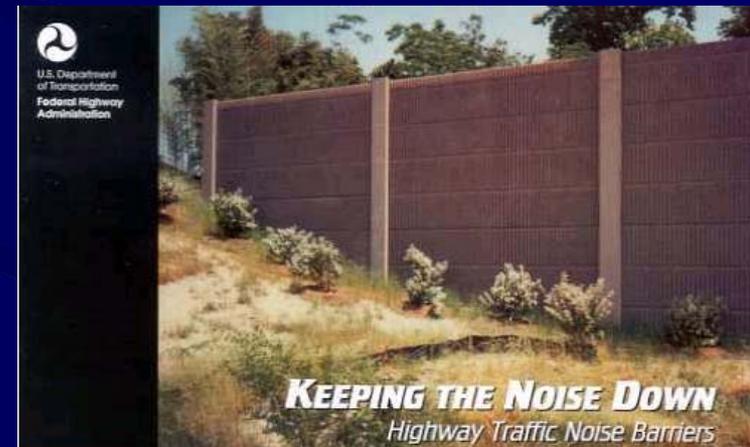
- Electricity
- Fuel Oil
- Natural Gas
- Gasoline
- Propane



# Examples of Aspects

## Community Interactions

- Noise pollution
- Odor, Vibration, Site Lighting
- Employee Commuting
- Trucking In and Out
- Dust Generation
- Electromagnetic Frequency Releases
- Recycling and Recovery Operations
- Appearance and Housekeeping
- Land Acquisition



# Examples of Aspects

## Waste

- Solvents
- Adhesives
- Inks
- Solder / Lead Wastes
- Oxidizers
- Paint and Related Waste
- Waste Treatment Sludge
- Contaminated Soil
- Asbestos
- Batteries
- Hazardous Liquids



# Examples of Aspects

## Water Consumption

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



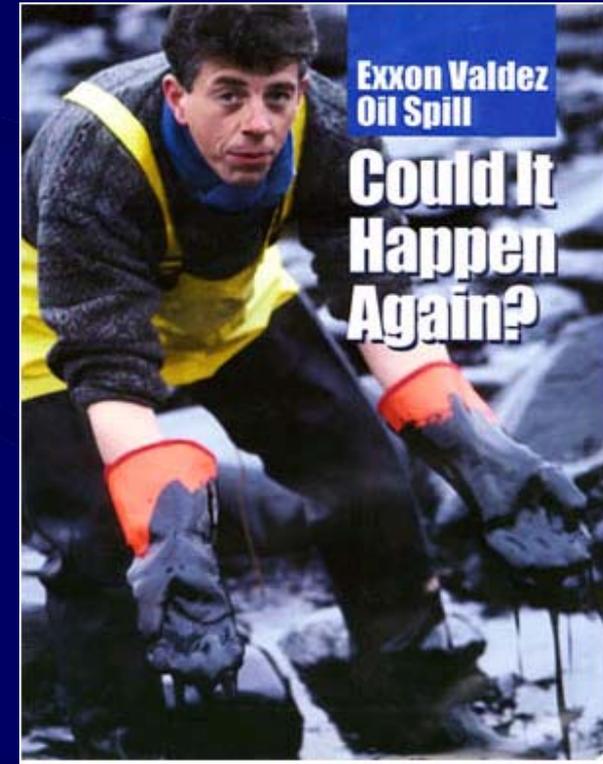
# Environmental Impacts

## Environmental Impact (effect)

Is any change in the environment, whether adverse or beneficial, wholly or partially, resulting from an organization's activities, products, or services

## Significant Impact

An activity that results in a substantial impact on the environment and is usually due to abnormal conditions.





# NCDOT Framework Aspects and Impacts Procedure

NCDOT-L2-GenOps-010

	<b>Environmental Aspect &amp; Impacts</b>	
	Division (Department Division name(s))	Office of Environmental Quality
	Prepared By	
	Number & Revision	CEQC-L2-GenOps-010 Revision
	Revision Date	Page 1 of 1
	ISO 14001 reference(s)	4.3.1 Environmental Aspect & Impact
	Document reference(s)	NCDOT-L2-GenOps-010a Environmental Aspect and Impact Matrix NCDOT-L2-GenOps-019 Monitoring & Measurements

**Purpose:**

This procedure includes listing the operations and activities within the EMS scope and identifying the associated aspect. Then impact are identified for those aspect and scored for significance. Those aspect deemed significant will be monitored and measured per procedure NCDOT-L2-GenOps-019. A subset of the significant aspect will be assigned target, objectives, and management programs per procedure NCDOT-L2-GenOps-019.

**Responsibilities:**

The Environmental Management System Team Leader (EMS Team Leader) will lead the Environmental Management System Team (EMS Team) through the aspect and impact analysis process. The EMS Team collaboratively identifies the aspect, impact, and rates the impact for significance.

The EMS Team Leader will ensure that all significant environmental aspect are taken into account when the EMS is developed and implemented. The EMS Responsible Person will ensure that all significant environmental aspect are taken into account when the EMS is maintained.

Provides a process to identify environmental aspects, and to determine those that are significant and should be addressed as a priority by the EMS system

# Step 1

## Identifying Aspects & Impacts

- 1) Select an activity, a product or service.
- 2) Identify as many environmental aspects as possible associated with the selected activity.
- 3) Identify as many actual and potential, positive and negative, environmental impacts associated with each identified aspect.



# Identify Activities, Products, Services

## Column 1

NCDOT OEQ		Environmental Aspects and Impacts Matrix																							
		Division: NCDOT Div or Dept X						Rev. Date:						ISD 14001 ref(s):						4.3.1 Environmental Aspects & Impacts					
Prepared By:		Number & Rev.: NCDOT-L4-GenOps-010a Rev x						Revision X						Document x-ref(s):						NCDOT-L2-GenOps-010					
NCDOT Environmental Aspects and Impacts Matrix																	*significance score set by EMS Team								
Department: XYZ																	Data Last Updated: 10/21/2006								
1	2	3			4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
 <b>Activities, Products, or Services (what we do)</b>	2/2006 - Harmful A - Abnormal Environmental Aspect Abbreviation				Noise Pollution	Air Pollution	Groundwater Contamination	Soil Contamination	Sediment/Erosion	Surface Water Contamination	Habitat/Wetlands Degradation	Natural Resource Use / Conservation	Plant/Animal Species Population Reduction	Cultural/Community Effects	Regulated Aspect	Other:	Other:	<b>Total Impact</b>	3 - Expected/Often 2 - Occasional 1 - Unlikely/Rare	<b>Score (Total n/Freq)</b>	<b>Significant * S or NS</b> ( < -S1 or > +S2 )				
	<b>Column 4</b> <b>Environmental Aspects</b>	<b>Environmental Impacts</b>										<b>Freq.</b>													
<b>Aspect List (possible aspects not limited to this list)</b> AE = Air Emissions      N = Noise      RC = Recycle      S'w/w = Storm Water & Waste Water CA = Contract Administration      NR = Natural Resource Use      RL = Release (spills & leaks)      SU=Surface Water HW = Hazardous Waste      PI = Public/Personnel Interface      S'w = Solid Waste      PR=Permitting & Regulation MH = Change Marine Habitat																									
Comments:																									

Identify and list the main Activities, Products, or Services within the scope of the EMS. List these in Column #1 of the Aspects and Impacts Matrix.



# Environmental Aspects

## Column 3

NCDOT OEQ		Environmental Aspects and Impacts Matrix																				
		Division: NCDOT Div or Dept X						Rev. Date:						4.31 Environmental Aspects & Impacts								
Prepared By:		NCDOT-L4-GenOps-010s Rev x						Revision X						ISO 14001 ref(s):								
Number & Rev:		NCDOT-L4-GenOps-010s Rev x						Revision X						Document x-ref(s):								
NCDOT Environmental Aspects and Impacts Matrix		* significance score set by EMS Team																				
Department: XYZ		Data Last Updated: 10/21/2006																				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Activities, Products, or Services (what we do)	Z=Zero - Normal A=Abnormal Environmental Aspect Abbreviation		Noise Pollution Air Pollution Groundwater Contamination Soil Contamination Sediment/Erosion Surface Water Contamination Habitat/Wetlands Degradation Natural Resource Use / Conservation Plant/Animal Species Population Reduction Cultural/Community Effects Regulated Aspect Other: Other:	Environmental Impacts													Total Impact	3 - Expected/Often Occurs 4 - Unacceptable 1 - Unlikely/Rare	Score (Total: Freq)	Significant * S or NS ( < -S or > -S2 )		
				Environmental Aspects													Freq.					
<b>Aspect List (possible aspects not limited to this list)</b>																						
AE = Air Emissions CA = Contract Administration HW = Hazardous Waste MH = Change Marine Habitat			N = Noise NR = Natural Resource Use PI = Public/Personnel Interface			RC = Recycle RL = Release (spills & leaks) SW = Solid Waste			S'W' = Storm Water & Waste Water SU = Surface Water PR = Permitting & Regulation													
Comments:																						

- For each activity, or sub-activity, list all associated environmental aspects.
- Then identify how each of these activities or sub-activities interact with the environment or cause environmental interactions.
- List or describe the environmental aspects in Column # 3.

## Step 2

# Ranking Aspects

For each aspect, score each environmental impact identified as either a detrimental or beneficial impact. Do this for both normal and abnormal conditions. ( Columns 4-16 )

**Detrimental** (-10 ) High Impact - environmental effects are likely to cause local or regional community destruction or degradation, or environmental legislation or regulations apply

( -5 ) Medium Impact - environmental effects are possible or there is noticeable environmental degradation

( -1 ) Low Impact - environmental effects are not likely, or the activity is not regulated

**Beneficial** ( 1 ) Low Impact – minimal beneficial environmental effects are possible

( 5 ) Medium Impact- beneficial environmental effects are likely

( 10 ) High Impact - highly beneficial environmental effects are likely to occur











# Where Do Significant Aspects Fit in Your EMS?

- Use of an EMS helps to manage your significant Aspects, and Impacts
- Objectives and targets for your significant Aspects should be considered
- Employees need to be aware of significant environmental aspects of their jobs
- Organizations should consider communicating significant Aspects and documents externally
- Organization should have procedures to monitor operations & activities that can have significant impact(s)



# Summary

- Significant Aspects are defined based on Division/ Unit specific criteria
- A formal procedure is used to evaluate significant Environmental Aspects and Impacts
- When identifying Aspects and Impacts, look beyond activities covered by laws and regulations
- Aspects determined to have significant impacts are reviewed periodically by your EMS Team



# Contact Information

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