Grade 9

Activity: A Grave Mistake Page: 311

Content Standards	Activity Objectives	CMT Correlation/Expected Performances
9.7 Elements on Earth move among reservoirs in the solid	1. Analyze data to trace the flow of contaminants in ground water.	D19. Explain how chemical and physical processes cause carbon to cycle through the
earth, oceans, atmosphere and organisms as part of	2. Conclude that past solutions, developed with the best intentions, may create	major earth reservoirs. D20. Explain how solar energy
biogeochemical cycles. >The cyclical movement of matter	contemporary problems.	causes water to cycle through the major earth reservoirs.
between reservoirs is driven by the Earth's internal and external sources of energy.		

The Changing Earth How do materials cycle through the Earth's systems?

Activity: A Grave Mistake

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Content Standards		Activity Objectives	CMT Correlation/Expected
			Performances
9.8 The use of	1.	Analyze data to trace the flow	D22. Explain how the release of
resources by human		of contaminants in ground	sulfur dioxide (SO ₂) into the
populations may affect		water.	atmosphere can form acid rain,
the quality of the	2.	Conclude that past solutions,	and how acid rain affects water
environment.		developed with the best	sources, organisms and human-
>Accumulation of metal		intentions, may create	made structures.
and non-metal ions used		contemporary problems.	
to increase agricultural			D24. Explain how the
productivity is a major			accumulation of mercury,
source of water			phosphates and nitrates affect
pollution.			the quality of water and the
			organisms that live in rivers,
			lakes and oceans.

Activity: A Grave Mistake

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Science and Technology in Society How do science and technology affect the quality of our lives?

Content Standards	Activity Objectives	CMT Correlation/Expected Performances
9.9 Some materials can be recycled, but others accumulate in the environment and may affect the balance of the Earth systems. >New technologies and changes in lifestyle can have positive and/or negative effects on the environment.	 Analyze data to trace the flow of contaminants in ground water. Conclude that past solutions, developed with the best intentions, may create contemporary problems. 	D25. Explain how land development, transportation options and consumption of resources may affect the environment.

Activity: Back to the Future

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Content Standards CMT Correlation/Expected Activity Objectives Performances 9.7 Elements on Earth 1. Analyze and interpret stream D20. Explain how solar energy causes water to cycle through move among flow data reservoirs in the solid 2. Identify the risks and benefits the major earth reservoirs. of development in a earth, oceans, atmosphere and floodplain. organisms as part of biogeochemical cycles. >The cyclical movement of matter between reservoirs is driven by the Earth's internal and external sources of energy.

The Changing Earth How do materials cycle through the Earth's systems?

Activity: **Back to the Future** Page: 293

Science and Technology in Society How do science and technology affect the quality of our lives?

Content Standards	Activity Objectives	CMT Correlation/Expected Performances
	1 Analyze and intervent stucture	
9.9 Some materials can	1. Analyze and interpret stream	D25. Explain how land
be recycled, but others	flow data	development, transportation
accumulate in the	2. Identify the risks and benefits	options and consumption of
environment and may	of development in a	resources may affect the
affect the balance of	floodplain.	environment.
the Earth systems.		
>New technologies and		D26. Describe human efforts to
changes in lifestyle can		reduce the consumption of raw
have positive and/or		materials and improve air and
negative effects on the		water quality.
environment.		

Activity: Color Me a Watershed

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Content Standards		Activity Objectives	CMT Correlation/Expected
			Performances
9.8 The use of	1.	Recognize that population	D22. Explain how the release
resources by human		growth and settlement cause	of sulfur dioxide into the
populations may affect		changes in land use.	atmosphere can form acid rain,
the quality of the	2.	Analyze how land use	and how acid rain affects water
environment.		variations in a watershed can	sources, organisms and human-
>Emission of		affect the runoff of water.	made structures.
combustion by-			
products, such as SO _{2,}			D24. Explain how the
CO_2 , and NOx by			accumulation of mercury,
industries and vehicles			phosphates and nitrates affects
is a major source of air			the quality of water and the
pollution.			organisms that live in rivers,
>Accumulation of metal			lakes and oceans.
and non-metal ions used			
to increase agricultural			

productivity is a major source of water pollution.	

Activity: **Color Me a Watershed** Page: 223

Science and Technology in Society How do science and technology affect the quality of our lives?

Content Standards		Activity Objectives	CMT Correlation/Expected
			Performances
9.9 Some materials can	1.	Recognize that population	D25. Explain how land
be recycled, but others		growth and settlement cause	development, transportation
accumulate in the		changes in land use.	options and consumption of
environment and may	2.	Analyze how land use	resources may affect the
affect the balance of		variations in a watershed can	environment.
Earth systems.		affect the runoff of water.	
> New technologies and			D26. Describe human efforts to
changes in lifestyle can			reduce the consumption of raw
have positive and/or			materials and improve air and
negative effects on the			water quality.
environment.			

Activity: Dilemma Derby

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Content Standards	Activity Objectives	СМТ
(focus of standard)	(from Project WET activity)	Correlation/Expected
		Performances
9.9 Some materials can	1. Outline reasons why managing	D25 Explain how land
be recycled, but others	water resources can create	development,
accumulate in the	dilemmas.	transportation options
environment and may	2. Identify, analyze, and select	and consumption of
affect the balance of	actions related to a water resource	resources may affect
the Earth's systems.	dilemma.	the environment.
>New technologies and		
changes in lifestyle can		D26 Describe human
have positive/negative		efforts to reduce the

effects on the environment.	consumption of raw materials and improve air and water quality.

Activity: **Easy Street** Page: 382

Science and Technology in Society How do science and technology affect the quality of our lives?

Content Standards	Activity Objectives	СМТ
(focus of standard)	(from Project WET activity)	Correlation/Expected
		Performances
9.9 Some materials can	1. Compare and contrast	D25 Explain how land
be recycled but others	contemporary and historical water	development,
accumulate in the	uses.	transportation options
environment and may	2. Identify water conservation	and consumption of
affect the balance of	strategies.	resources may affect
the Earth's systems.		the environment.
>New technologies and		
changes in lifestyle can		D26 Describe human
have positive and/or		efforts to reduce the
negative effects on the		consumption of raw
environment.		materials and improve
		air and water quality.

Activity: Get the Ground Water Picture Page: 136

Science and Technology in Society How do science and technology affect the quality of our lives?

Content Standards	Activity Objectives	CMT Correlation/Expected Performances
9.8 The use of resources by human populations may affect the quality of the environment. >Accumulation of metal and non-metal ions used to increase agricultural productivity is a major source of water	 Identify the parts of a ground water system. Compare movement of water through diverse substrates. Relate different types of land uses to potential ground water contamination. 	D22. Explain how the release of sulfur dioxide (SO ₂) into the atmosphere can form acid rain, and how acid rain affects water sources, organisms and human- made structures. D24. Explain how the accumulation of mercury, phosphates and nitrates affects the quality of water and the
pollution.		organisms that live in rivers, lakes and oceans.

Activity: Get the Ground Water Picture Page: 136

Science and Technology in Society How do science and technology affect the quality of our lives?

Content Standards		Activity Objectives	CMT Correlation/Expected Performances
9.9 Some materials can be recycled, but others	1.	Identify the parts of a ground water system.	D25 Explain how land development, transportation
accumulate in the environment and may	2.	Compare movement of water through diverse substrates.	options and consumption of resources may affect the
affect the balance of the Earth systems. >New technologies and changes in lifestyle can have positive and/or negative effects on the environment.	3.	Relate different types of land uses to potential ground water contamination.	environment.

Activity: Hangin' Together Page: 35

Properties of Matter How does the structure of matter affect the properties and uses of materials?

Content Standards (focus of standard)	Activity Objectives (from Project WET activity)	CMT Correlation/Expected Performances
 9.4 Atoms react with one another to form new molecules. >Atoms have a positively charged nucleus surrounded by negatively charged electrons. >The configuration of atoms and molecules determines the properties of the materials. 	 Illustrate the structure and intermolecular forces of the water molecule in relation to hydrogen bonding. Explain the role of hydrogen bonding and its relationship with some of the unique characteristics of water. Deduce how these unique molecular properties of water are critical to life on Earth. 	D11. Describe how atoms combine to form new substances by transferring electrons (ionic bonding) or sharing electrons (covalent bonding).

Activity: Hot Water

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Content Standards	Activity Objectives	CMT Correlation/Expected Performances
9.8 The use of resources by human populations may affect the quality of the environment. >Accumulation of metal and non-metal ions used to increase agricultural productivity is a major source of water pollution.	 Apply basic principles and strategies in debating water resource issues. Recognize the effectiveness of reason-based versus emotion 	 D22. Explain how the release of sulfur dioxide into the atmosphere can form acid rain, and how acid rain affects water sources, organisms and humanmade structures. D24. Explain how the accumulation of mercury, phosphates and nitrates affects the quality of water and the organisms that live in rivers, lakes and oceans.

Activity: **Hot Water** Page: 388

Science and Technology How do science and technology affect the quality of our lives?

Content Standards	Activity Objectives	CMT Correlation/Expected Performances
9.9 Some materials can be recycled, but others accumulate in the environment and may affect the balance of the Earth systems. >New technologies and changes in lifestyle can have positive and/or negative effects on the environment.	 Apply basic principles and strategies in debating water resource issues. Recognize the effectiveness of reason-based versus emotion 	 D25. Explain how land development, transportation options, and consumption of resources may affect the environment. D26. Describe human efforts to reduce the consumption of raw materials and improve air and water quality.

Activity: People of the Bog

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Properties of Matter

How does the structure of matter affect the properties and uses of materials?

Content Standards	Activity Objectives	CMT Correlation/Expected Performances
 9.4 Atoms react with one another to form new molecules. >The configuration of atoms and molecules determines the properties of the materials. 	 Describe characteristics of bog environments. Explain the conditions of bogs that allow for the preservation of artifacts from the past. Compare the rates of decomposition of articles in aerobic and anaerobic environments. 	D12. Explain the chemical composition of acids and bases, and explain the change of pH in neutralization reactions.

Activity: **Perspectives**

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Science and Technology in Society How do science and technology affect the quality of our lives?

Content Standards	Activity Objectives	CMT Correlation/Expected
		Performances
9.9 Some materials can	1. Recognize that people hav	D25. Explain how land
be recycled, but others	differing values regarding	development, transportation
accumulate in the	water resource manageme	nt options and consumption of
environment and may	issues.	resources may affect the
affect the balance of	2. Evaluate strengths and	environment.
the Earth systems.	weaknesses of proposed	
>New technologies and	solutions to water resource	e D26. Describe human efforts to
changes in lifestyle can	management issues.	reduce the consumption of raw
have positive and/or	3. Describe purposes of diver	rse materials and improve air and
negative effects on the	advocacy groups and	water quality.
environment.	summarize their similaritie	es
	and differences.	

Activity: Sparkling Water

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Properties and Matter

How does the structure of matter affect the properties and uses of materials?

Content Standards		Activity Objectives	CMT Correlation/Expected
			Performances
9.4 Atoms react with	1.	Describe the processes for	D12. Explain the chemical
one another to form		treating wastewater.	composition of acids and bases,
new molecules.	2.	Compare how water is	and explain the change of pH in
> The configuration of		cleaned in the water cycle to	neutralization reactions.
atoms and molecules		how it is cleaned in	
determines the		contemporary water treatment	
properties of the		systems.	
materials.	3.	List nontoxic household	
		cleaning methods.	

Activity: **Sparkling Water** Page: 348

Science and Technology in Society How do science and technology affect the quality of our lives?

9.6 Chemical technologies present1. Describe the processes for treating wastewater.D18. Explain the short-andboth risks and benefits to the health and well-2. Compare how water is cleaned in the water cycle toD19. Explain the short-and	Content Standards	Activity Objectives	CMT Correlation/Expected Performances
being of humans, plants, and animals.how it is cleaned in contemporary water treatment systems.materials on the quality of the 	technologies present both risks and benefits to the health and well- being of humans, plants, and animals. > The products of chemical technologies include synthetic fibers, pharmaceuticals,	 treating wastewater. 2. Compare how water is cleaned in the water cycle to how it is cleaned in contemporary water treatment systems. 3. List nontoxic household 	D18. Explain the short-and long-term impacts of landfills and incineration of waste materials on the quality of the

Activity: **Sparkling Water** Page: 348

Content Standards	Activity Objectives	CMT Correlation/Expected Performances
9.9 Some materials can be recycled, but others accumulate in the environment and may affect the balance of the Earth systems. >New technologies and changes in lifestyle can have positive and/or negative effects on the environment.	 Describe the processes for treating wastewater. Compare how water is cleaned in the water cycle to how it is cleaned in contemporary water treatment systems. List nontoxic household cleaning methods. 	D26. Describe human efforts to reduce the consumption of raw materials and improve air and water quality.

Activity: Super Bowl Surge

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Properties of Matter How does the structure of mater affect the properties and uses of materials?

Content Standard		Activity Objectives	CMT Correlation/Expected Performances
9.4 Atoms react with one another to form new molecules. >The configuration of atoms and molecules determines the properties of the materials.	2. 3. 4.	Illustrate how demands on some treatment plants cause overflow. Explain problems with sewage overflow. Propose solutions to a water management problem. Recognize how presentation strategies influence public policy.	D12. Explain the chemical composition of acids and bases, and explain the change of pH in neutralization reactions.

Activity: Super Bowl Surge

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The Changing Earth How do materials cycle through the Earth's systems?

Content Standard		Activity Objectives	CMT Correlation/Expected
			Performances
9.7 Elements on Earth	1.	Illustrate how demands on	D20. Explain how solar energy
move among reservoirs		some treatment plants cause	causes water to cycle through
in the solid earth,		overflow.	the major earth reservoirs.
oceans, atmosphere	2.	Explain problems with sewage	
and organisms as part		overflow.	
of biogeochemical	3.	Propose solutions to a water	
cycles.		management problem.	
>The cyclical movement	4.	Recognize how presentation	
of matter between		strategies influence public	
reservoirs is driven by		policy.	
the Earth's internal and			

energy	
energy.	

Activity: Super Bowl Surge

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Science and Technology in Society How do science and technology affect the quality of our lives?

Content Standard	Activity Objectives	CMT Correlation/Expected Performances
9.8 The use of resources by human populations may affect the quality of the environment. >Accumulation of metal and non-metal ions used to increase agricultural productivity is a major source of water pollution.	 Illustrate how demands on some treatment plants cause overflow. Explain problems with sewage overflow. Propose solutions to a water management problem. Recognize how presentation strategies influence public policy. 	D24 Explain how the accumulation of mercury, phosphates and nitrates affects the quality of water and the organisms that live in rivers, lakes and oceans.

Activity: The Long Haul

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Content Standards	Activity Objectives	CMT Correlation/Expected
		Performances
9.9 Some materials can	1. Develop an awareness of	D25. Explain how land
be recycled, but others	various volumes of water.	development, transportation
accumulate in the	2. Appreciate today's readily	options and consumption of
environment and may	available water supplies.	resources may affect the
affect the balance of	3. Relate how easy access to	environment.

the Earth systems. > New technologies and changes in lifestyle can have positive and/or negative effects in the environment.	water can encourage people to use large amounts of water.	D26. Describe human efforts to reduce the consumption of raw materials and improve air and water quality.
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Activity: **The Price Is Right** Page: 333

Science and Technology in Society How do science and technology affect the quality of our lives?

Content Standards	Activity Objectives	CMT Correlation/Expected Performances
9.9 Some materials can be recycled, but others accumulate in the environment and may affect the balance of the Earth systems. >New technologies and changes in lifestyle can have positive and/or negative effects on the environment.	 Recognize that cost and the environmental considerations influence the planning and construction of water projects. Calculate the costs involved in supplying clean water to consumers and removing wastewater. 	D25. Explain how land development, transportation options and consumption of resources may affect the environment.D26. Describe human efforts to reduce the consumption of raw materials and improve air and water quality.

Activity: **The Pucker Effect**

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Content Standards	Activity Objectives	СМТ
(focus of standard)	(from Project WET activity)	Correlation/Expected
		Performances

9.6 Chemical	1. Describe how underground	D18. Explain the
technologies present	point source pollutants move	short- and long-term
both risks and benefits	through ground water.	impacts of landfills
to the health and well-	2. Analyze data from test wells	and incineration of
being of humans,	they have "drilled" to identify	waste materials on the
plants, and animals.	point source contamination.	quality of the
>The products of		environment.
chemical technologies		
include synthetic fibers,		
pharmaceuticals,		
plastics and fuels.		

Activity: Water Court

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Science and Technology in Society How do science and technology affect the quality of our lives?

Content Standards	Activity Objectives	CMT Correlation/Expected Performances
9.8 The use of resources by human populations may affect the quality of the environment. >Accumulation of metal and non-metal ions used to increase agricultural productivity is a major source of water	 Demonstrate how disputes regarding water quality and quantity can be settled through mediation or litigation. Develop and present an argument supporting their view relevant to a water- related issue. Evaluate arguments 	D22. Explain how the release of
pollution.	presented by people on opposing sides of an issue.	the quality of water and the organisms that live in rivers, lakes and oceans.

Activity: Water Court Page: 413

Content Standards	Activity Objectives	CMT Correlation/Expected Performances
9.9 Some materials can be recycled, but others accumulate in the environment and may affect the balance of the Earth systems. >New technologies and changes in lifestyle can have positive and/or negative effects on the environment.	Demonstrate how disputes regarding water quality and quantity can be settled through mediation or litigation. Develop and present an argument supporting their view relevant to a water- related issue. Evaluate arguments presented by people on opposing sides of an issue.	 D25 Explain how land development, transportation options and consumption of resources may affect the environment. D26. Describe human efforts to reduce the consumption of raw materials and improve air and water quality.

Activity: Wet Vacation

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Science and Technology in Society

How do science and technology affect the quality of our lives?

Content Standards	Activity Objectives	CMT Correlation/Expected
		Performances
9.8 The use of	1. Identify factors that affect	D22. Explain how the release of
resources by human	temperature and precipitation	sulfur dioxide into the
populations may affect	patterns.	atmosphere can form acid rain,
the quality of the	2. Analyze how weather	and how acid rain affects water
environment.	conditions influence tourism.	sources, organisms and human-
> Emission of		made structures.
combustion by-		
products, such as SO ₂ ,		D23. Explain how the
CO_2 and NOx by		accumulation of carbon dioxide
industries and vehicles		in the atmosphere increases
is a major source of air		Earth's "greenhouse" effect and
pollution.		may cause climate changes.
>Accumulation of metal		
and non-metal ions used		D24. Explain how the
to increase agricultural		accumulation of mercury,
productivity is a major		phosphates and nitrates affects
source of water		the quality of water and the
pollution.		organisms that live in rivers,
		lakes and oceans.

Activity: What's the Solution? Page: 54

Content Standards	Activity Objectives	CMT Correlation/Expected Performances
9.7 Elements on Earth move among reservoirs in the solid earth, oceans, atmosphere and organisms as part of biogeochemical cycles. >Elements on Earth exist in essentially fixed amounts and are located in various chemical reservoirs.	 Discriminate solutions from other mixtures. Demonstrate the water's ability to dissolve solids, liquids and gases. 	D20. Explain how solar energy causes water to cycle through the major earth reservoirs.

How do materials cycle through the Earth's system?

Activity: Where Are the Frogs?

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Science and Technology in Society How do science and technology affect the quality of our lives?

Content Standards	Activity Objectives	СМТ
(focus of standard)	(from Project WET activity)	Correlation/Expected
		Performances
9.8 The use of resources by human populations may affect the quality of the environment. >Emission of combustion by- products, such as SO ₂ , CO ₂ , and NOx by industries and vehicles is a major source of air	 Illustrate the meaning of pH. Analyze the effects of acidic water on plant and animal life. Describe how acid rain can affect ecosystems. 	PerformancesD22. Explain how the release of sulfur dioxide (SO2) into the atmosphere can form acid rain, and how acid rain affects water sources, organisms and human-made structures.D24. Explain how the
pollution.		accumulation of mercury, phosphates, and nitrates affects the quality of water and the organisms that live in rivers, lakes, and oceans.

Whose Problem is it?

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Activity:

Content Standards	Activity Objectives	CMT Correlation/Expected
(focus of standard)	(from Project WET activity)	Performances
9.9 Some materials can be recycled, but others accumulate in the environment and may affect the balance of Earth systems. >New technologies and changes in lifestyle can have positive and/or negative effects on the environment.	 Analyze how water issues affect individuals as well as world populations, and how these issues can have short-and/or long-term implications. Illustrate the scope and duration of water-related issues. 	D25 Explain how land development, transportation options and consumption of resources may affect the environment. D26 Describe human efforts to reduce the consumption of raw materials and improve air and water quality.

Science and Technology in Society How do science and technology affect eh quality of our lives?

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