



Content Alignment: High School Environmental Science

Unit Topic	Chapter Topic	Subtopic	NanoSense Lessons	Specific Materials
Water	Using Science to Solve Environmental Problems	What is Science	Size Matters <ul style="list-style-type: none"> Lesson 1 (L1): Intro to Nanoscience Lesson 2 (L2): Scale of Objects Lesson 3 (L3): Unique Properties at the Nanoscale 	Slides <ul style="list-style-type: none"> L1: 1-4 L3: 1-17 Activity/Handout <ul style="list-style-type: none"> L1 <ul style="list-style-type: none"> Scale Diagram <ul style="list-style-type: none"> Have students discuss and question diagram using questions 1-2 from student worksheet L2 <ul style="list-style-type: none"> Number Line Student Quiz Reading: Visualizing the Nanoscale Student Quiz L3 <ul style="list-style-type: none"> Reading: Size-Dependent Properties Labs A-H, any combination of labs as instructor sees fit Student Quiz Reading: The Personal Touch Reading: Intro to Nanoscience
	Our Water Resources	Solutions to Water Shortages	Fine Filters <ul style="list-style-type: none"> Lesson 1 (L1): The Water Crisis 	Slides <ul style="list-style-type: none"> L1: 1-27 Activity/Handout <ul style="list-style-type: none"> The World-Wide Water Shortage: Student Reading The Water Crisis: Student Data Worksheet The Water Crisis Initial Ideas Student Quiz
	Freshwater Pollution	Wastewater Treatment Plants	Fine Filters <ul style="list-style-type: none"> Lesson 2 (L2): The Science of Water Lesson 3 (L3): Nanofiltration 	Slides <ul style="list-style-type: none"> L2: 1-34 Activity/Handout <ul style="list-style-type: none"> L2: The Science of Water Quiz



				<ul style="list-style-type: none"> • L3: <ul style="list-style-type: none"> ○ Comparing Filtration and Nanofiltration Lab Activities ○ Reflecting on the Guiding Questions
		Pathogens	Fine Filters <ul style="list-style-type: none"> • Lesson 3 (L3): Nanofiltration 	Slides <ul style="list-style-type: none"> • L3: 1-21 Activity/Handout <ul style="list-style-type: none"> • Reading: New Nano- Membranes • Which Method is Best? • Jarny Water Activity • Comparing Filtration and Nanofiltration Lab Activities • Reading: New Nano-Membranes
Atmosphere and Climate	The Ozone Shield	The Ozone Hole: The Effects of Ozone Thinning	Clear Sunscreen <ul style="list-style-type: none"> • Lesson 1 (L1): Intro to Sun Protection • Lesson 2 (L2): All About Sunscreens • Lesson 3 (L3): How Sunscreens Block: Absorption • Lesson 4 (L4): How Sunscreen Appear: Scattering • Lesson 5 (L5): Ad Campaign Project 	Slides <ul style="list-style-type: none"> • L1: All slides (S10 optional) • L2: All slides • L3: All slides • L4: All slides Activity/Handout <ul style="list-style-type: none"> • L1: UV Bead Lab • L2: <ul style="list-style-type: none"> ○ Sunscreen ingredients Activity ○ Light Scattering by Three Sunscreens ○ Reflection on the Guiding Questions • L3: <ul style="list-style-type: none"> ○ Reading: Absorption of Light by Matter ○ Reflecting on the Guiding Questions • L4: <ul style="list-style-type: none"> ○ Reading: Scattering of Light by Particles ○ Sunscreens & Sunlight Animations • L5: Ad Campaign Project



Energy	A Sustainable Energy Future	Solar Energy	<p>Clean Energy</p> <ul style="list-style-type: none"> • Lesson 1 (L1): Intro to Clean Energy • Lesson 2 (L2): Solar Energy and Nanoscience 	<p>Slides</p> <ul style="list-style-type: none"> • L1: 1-18 • L2: 1-18 <p>Activity/Handout</p> <ul style="list-style-type: none"> • L1: <ul style="list-style-type: none"> ○ Clean Energy Initial Ideas ○ Reading: Hybrid Cars, Solar Cells, and Nanoscience ○ Solar Cell Animations ○ Student Worksheet • L2: Nanocrystalline Solar Cell Lab
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