

# NATIONAL SCIENCE EDUCATION STANDARDS

## Breathing Room! Indoor Pollution Activity Handbook

| <b>GRADE</b> | <b>CATEGORY</b>               | <b>SUB-CATEGORY</b>                            | <b>STANDARD</b>  |
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| 5-8          | Earth and Space Science       | Structure Of The Earth System                  | The atmosphere is a mixture of nitrogen, oxygen, and trace gases that include water vapor.   |
| 5-8          | History and Nature of Science | Nature Of Science                              | In areas where active research is being pursued and in which there is not a great deal of experimental or observational evidence and understanding, it is normal for scientists to differ with one another about the interpretation of the evidence or theory being considered.        |
| 5-8          | Life Science                  | Populations And Ecosystems                     | The number of organisms an ecosystem can support depends on the resources available and abiotic factors, such as quantity of light and water, range of temperatures, and soil composition.   |
| 5-8          | Life Science                  | Regulation And Behavior                        | All organisms must begin to be able to obtain and use resources, grow, reproduce, and maintain stable internal conditions while living in a constantly changing external environment.  |
| 5-8          | Life Science                  | Structure And Function In Living Systems       | All organisms are composed of cells-the fundamental unit of life. Most organisms are single cells; other organisms, including humans, are multicellular.   |
| 5-8          | Life Science                  | Structure And Function In Living Systems       | Disease is a breakdown in structures or functions of an organism. Some diseases are the result of intrinsic failures of the system. Others are the result of damage by infection by other organisms.   |
| 5-8          | Physical Science              | Properties And Changes Of Properties In Matter | A substance has characteristic properties, such as density, a boiling point, and solubility, all of which are independent of the amount of the sample. A mixture of substances often can be separated into the original substances using one or more of the characteristic properties. |

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| 5-8 | Physical Science       | Properties And Changes Of Properties In Matter | Substances react chemically in characteristic ways with other substances to form new substances (compounds) with different characteristic properties. In chemical reactions, the total mass is conserved. Substances often are placed in categories or groups if they react in similar ways; metals is an example of such a group. |
| 5-8 | Science and Technology | Understanding About Science And Technology     | Perfectly designed solutions do not exist. All technological solutions have tradeoffs, such as safety, cost, efficiency, and appearance.   |
| 5-8 | Science and Technology | Understanding About Science And Technology     | Science and technology are reciprocal. Science helps drive technology.   |
| 5-8 | Science as Inquiry     | Abilities Necessary To Do Scientific Inquiry   | Communicate scientific procedures and explanations.  |
| 5-8 | Science as Inquiry     | Abilities Necessary To Do Scientific Inquiry   | Design and conduct a scientific investigation.   |
| 5-8 | Science as Inquiry     | Abilities Necessary To Do Scientific Inquiry   | Develop descriptions, explanations, predictions, and models using evidence.  |
| 5-8 | Science as Inquiry     | Abilities Necessary To Do Scientific Inquiry   | Use appropriate tools and techniques to gather and analyze, and interpret data.  |
| 5-8 | Science as Inquiry     | Understandings About Scientific Inquiry        | Current scientific knowledge and understanding guide scientific investigations. Different scientific domains employ different methods, core theories, and standards to advance scientific knowledge and understanding.   |
| 5-8 | Science as Inquiry     | Understandings About Scientific Inquiry        | Different kinds of questions suggest different kinds of scientific investigations. Some investigations involve observing and describing objects, organisms, or events; some involve collecting specimens; some involve experiments; some involve discovery of new objects and phenomena; and some involve making models.           |
| 5-8 | Science as Inquiry     | Understandings About Scientific Inquiry        | Mathematics is important in all aspects of scientific inquiry.   |

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| 5-8 | Science as Inquiry                          | Understandings About Scientific Inquiry | Science advances through legitimate skepticism. Asking questions and querying other scientists' explanations is part of scientific inquiry. Scientists evaluate the explanations proposed by other scientists by examining evidence, comparing evidence, identifying faulty reasoning, pointing out statements that go beyond the evidence, and suggesting alternative explanations for the same observations. |
| 5-8 | Science as Inquiry                          | Understandings About Scientific Inquiry | Scientific investigations sometimes result in new ideas and phenomena for study, generate new methods of procedures for an investigation, or develop new technologies to improve the collection of data. All of these results can lead to new investigations.  |
| 5-8 | Science in Personal and Social Perspectives | Personal Health                         | Natural environments may contain substances (for example, radon and lead) that are harmful to human beings.  |
| 5-8 | Science in Personal and Social Perspectives | Personal Health                         | The potential for accidents and the existence of hazards imposes the need for injury prevention.   |
| 5-8 | Science in Personal and Social Perspectives | Personal Health                         | The use of tobacco increases the risk of illness.  |
| 5-8 | Science in Personal and Social Perspectives | Risks And Benefits                      | Important personal and social decisions are made based on perceptions of benefits and risks.   |
| 5-8 | Science in Personal and Social Perspectives | Risks And Benefits                      | Risk analysis considers the type of hazard and estimates the number of people that might be exposed and the number likely to suffer consequences.  |
| 5-8 | Science in Personal and Social Perspectives | Risks And Benefits                      | Students should understand the risks associated with natural hazards (fires, floods, tornadoes, hurricanes, earthquakes, and volcanic eruptions), with chemical hazards (pollutants in air, water, soil, and food), with biological hazards (pollen, viruses, bacterial, and parasites), social hazards (occupational safety and transportation), and with personal hazards (smoking, dieting, and drinking).  |

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| 5-8 | Science in<br>Personal and<br>Social<br>Perspectives | Science And<br>Technology In<br>Society | Science influences society through its knowledge<br>and world view.  |
| 5-8 | Science in<br>Personal and<br>Social<br>Perspectives | Science And<br>Technology In<br>Society | Scientists and engineers have ethical codes<br>requiring that human subjects involved with<br>research be fully informed about risks and<br>benefits associated with the research before the<br>individuals choose to participate. |