STAGE 1 – LEARNING OUTCOMES	
Unit Title: Ethics, Responsibility, and the Science of Nuclear Energy **Grade: 6th Science** **(A unit simultaneously taught with a unit on the moral and political question of the atomic bomb)**	
Learning Goals/Understandings: ***Students will understand that…*** (The following concepts, essential questions, and enduring understandings are cross-curricular for both the science and social science units) Concepts/Big Ideas: Power Identity (Self-Other; defining self by othering) Resistance Forgiveness Justice Systems Colonialism - Uranium from Congo Imperialism Nationalism Racism Exploitation Extractivism Capitalism "Sacrifice zones" Consumption Language and depiction Patriotism and nationalism (who is included/excluded) Student Understandings:	**Essential Questions:** How is science used to perpetuate atrocities? How does a community/society heal after widespread harm is perpetrated? **What is our ethical responsibility as scientists when examining the nature of nuclear energy?** **How is data and narrative used in the debate about energy?**

Students will understand that Black Americans played an important role in protesting the atomic bomb and use of nuclear energy; **Students will understand that the atomic bomb and nuclear energy was developed as a part of imperialist, colonist, capitalism, nationalist systems;** **Students will understand that use of the atomic bomb was racialized and there was intentional use of racism against Japanese people to justify use of the bomb;** **Students will understand that ways in which people of the Pacific Islands were impacted by atomic bomb testing;** **Students will understand that memorialization is important to societal healing and the choices we (as individuals and as a society) make moving forward;** **Students will understand that the identities/representation of different peoples has an impact on inclusionary and exclusionary policies;** **Students will understand that data and science can be misconstrued to advance political agenda;** **Students will understand how scientific data can be used as part of propaganda that furthers nationalist agendas;** **Students will understand that there are complex perspectives illustrated by personal narratives that may disagree with widely-held data;** **Students will understand the geopolitical context that lead up to the bombings of Hiroshima and Nagasaki.**	

Students will know: **• (What key knowledge will students acquire as a result of this unit?)** **Students will know the biological impact of nuclear energy on the body and the environment/natural world (immediate and over time);** **Students will know the historical and political context leading up to the atomic bombings;** **Students will know the race to develop nuclear weaponry and its impact on the bombing;** **Students will know how Chicago plays a significant role in the development of the atomic bomb;** **Students will know some of the major causes of WWII and the Japanese/American perspectives**	***Students will be skilled at ….*** **Students will be able to:**
Standards:	
SS.G.I.6-8.MC. Construct different representations to explain the spatial patterns of cultural and environmental characteristics. **SS.CV.I.6-8.MC. Evaluate the powers and responsibilities of citizens, political parties, interest groups, and the media.** **SS.G.3.6-8.MC. Evaluate the influences of long term human-induced environmental change on spatial patterns of conflict and cooperation.**	

SS.H.I.4. Explain connections among historical contexts and why individuals and groups differed in their perspectives during the same historical period. **SS.H.I.6-8.MC. Use questions generated about individuals and groups to analyze why they, and the developments they shaped, are seen as historically significant.** **SS.H.4.6-8.MC. Organize applicable evidence into a coherent argument about the past.** **NGSS Standards** **MS-PSI-3** **MS-ESS3-3** **MS-ESS3-4** **MS-ESS3-5 - This unit will be follow a larger unit on climate change and climate/environmental justice**	

STAGE 2 – ASSESSMENT EVIDENCE	
Performance Tasks: **1) Hook - Gallery walk of health data, environmental data, propaganda, and short excerpts of narratives from Diné miners** **2) Building Background Knowledge - students will be tasked with creating a short informational "one pager" to teach others about nuclear energy. This may include informational writing, illustrations, and/or infographics of their design.** **3) Structured Academic Controversy - students will investigate evidence to come to consensus around the core statement "The U.S. Should Not Use Nuclear Energy as a Main Source of Energy to Reduce Carbon Emissions"** **4) Participatory Action Research Project - students will have a choice about how they would like to share their learning**	**Other Evidence:** Entrance and Exit Slips

about nuclear energy and how they would like to take action on the issue. They may conduct this project through the lenses of memorialization, teaching, policy proposals, and/or visual art, performance art, music, or poetry.	
Students will evaluate: **1) The effect of nuclear energy on the body and the environment (air, soil, water)** **2) The misconception that nuclear energy is a cleaner energy source. How can we turn the focus on reducing carbon emissions to reducing energy consumption and investing in renewable/sustainable energy sources?** **3) The human rights violations of uranium mining and nuclear energy plants.**	

Materials:

Science SAC Protocol Materials
Planning Document
Structured Academic Controversy Evidence Organizer
Side A Resources 1
Side A Resources 2 - From ***Downwind: A People's History of the Nuclear West*** by Sarah Fox
Side B Resources
Additional Resources on Renewables
Chicago Resolution on Nuclear Energy
Union of Concerned Scientists Article on Chicago Resolution