FROM LOOKING AT STARS TO LIVING ON MARS

HAZARD 1: RADIATION

Name _____

Class _____

INTRODUCTION

A human journey to Mars, at first glance, offers an inexhaustible amount of complexities. To bring a mission to the Red Planet from fiction to fact, NASA's Human Research Program has organized hazards that astronauts will encounter on a continual basis into five classifications. Pooling the challenges into categories allows for an organized effort to overcome the obstacles that lay before such a mission.

For more information on the hazard of space radiation, watch the following video:

"Hazards of Human Spaceflight | Hazard 1: Space Radiation" (Length 3:19)

https://safeYouTube.net/w/rIOX

For students unable to access Safe YouTube links, the video is also available here:
https://www.youtube.com/watch?v=3jRxgvwhGC0&list=PLiuUQ9asub3RRA-BMh7wLsU7V6gUUSRwH

PROCEDURE

Read the description, in the first column below, of your group's assigned hazard. Then, brainstorm possible solutions to avoid or mitigate this hazard, and identify STEM skill sets that will likely be necessary to develop and implement these solutions. Record your ideas in the appropriate columns, and be prepared to share with the class.

Hazard Description	Possible Solutions	Necessary STEM Skill Sets
The first hazard of a human mission to Mars is also the most difficult to visualize because, well, space radiation is invisible to the human eye. Radiation is not only stealthy, but considered one of the most menacing of the five hazards. Above Earth's natural protection, radiation exposure increases cancer risk, damages the central nervous system, can alter cognitive function, reduce motor function and prompt behavioral changes.		

To learn what can happen above low-Earth orbit, NASA studies how radiation affects biological samples using a ground-based research laboratory. The space station sits just within Earth's protective magnetic field, so while our astronauts are exposed to ten-times higher radiation than on Earth, it's still a smaller dose than what deep space has in store.		