Manufacturers Group: You are a Consultant to Medical Device Makers

Your Background and Biography

You grew up in southern Brazil, in a mid-sized city noted for the immigrants from a wide range of European countries who settled there in the 1930s and after World War II. Your father worked in the city’s extensive industrial sector. You attended the city’s large public university, earning a degree in biochemistry and biotechnology. After attending graduate school in Spain you had a series of postdoctoral fellowships in Portugal, Canada, and finally back in Brazil in São Paulo. These fellowships helped you become an expert on the use of rare earth metals in medical applications.

Today you work in the Department of Bioprocesses at the Center for Mineral Technology (abbreviated CETEM in Portuguese), a government research laboratory in Rio de Janeiro. CETEM conducts research to benefit society by developing technology for the mining and metallurgical sector of the Brazilian economy.

You study how the rare earth elements can be used in diagnosing and treating diseases. You have advised the manufacturers of a new generation of magnetic resonance imaging (MRI) machines. These so-called “open” and “high-field” machines use permanent magnets made of the rare earth element neodymium to generate very powerful magnetic fields. When doctors need to see fine detail on an MRI, they inject patients with a solution of gadolinium ions. The unique magnetic properties of gadolinium make the images sharper, allowing doctors to find tumors more easily and better diagnose problems in the flow of blood. Neodymium- or erbium-based lasers are used to treat a wide range of medical and dental conditions. The luminescent properties of other rare earth elements make them useful “biomarkers,” allowing molecular geneticists to mark and track specific strands of DNA in experiments.

In this negotiation you have been asked to represent the interests of medical device makers, doctors, and researchers in creating a Sustainability Seal. They need access to a stable supply of rare earth elements and are worried that the demand for rare earth elements may soon start to exceed the supply. Device makers would like to be able to advertise their products as ethically sourced, provided it does not make their work too much more complicated or their products a lot more expensive. But they are not particularly vulnerable to pressure from consumers or activists, since sick patients are
not going to boycott an MRI maker for failing to use ethically sourced neodymium. Finally, they would like to see support for recycling rare earth magnets so that the supply can be increased without additional mining.

Your Mission

Your goal at this hearing is to convince the Stewardship Council to include the Manufacturers Group’s recommendations in its final Sustainability Seal guiding values. To make this argument effectively, you must do the following:

- Complete the assigned readings listed at the bottom of this page.
- Work closely with the other members of your group to develop clear answers to the Stewardship Council’s questions.
- Use as much specific information as possible to develop strong arguments for your position that changing consumer demands require businesses to pursue creative problem solving and innovation in resolving the pressing issues caused by rare earth element mining, supply chains, and manufacturing.
- Read as much as you can about your position and the positions of the other groups.
- Complete written reflections on your character, interest group, and readings as assigned.

Your Victory Objectives

- You will receive 10 points if the Stewards select your group’s proposal as the final Sustainability Seal guiding values.
- The Stewards will rank the interest groups by how well their goals are represented in the final Sustainability Seal guiding values. You will receive between 1 and 4 points based on how the Manufacturers Group is ranked and how well the Sustainability Seal guiding values reflect your goals.

SOURCES

Group Sources

- Manufacturers Case Study: “Using the Rare Earth Elements”

Individual Sources

- Center for Diagnostic Imaging. “What It’s Like to Get a High-Field Open MRI.” February 3, 2015. (Video, 2:16 min.)
Giese, E. C. “Rare Earth Elements: Therapeutic and Diagnostic Applications in Modern Medicine.” Clinical and Medical Reports 2:1 (December 14, 2018), 1–2.