## **Science-Fiction Science—Grey Goo**

Eric Drexler first used the term "grey goo" in his 1986 book *Engines of Creation*:

Imagine such a replicator floating in a bottle of chemicals, making copies of itself...the first replicator assembles a copy in one thousand seconds, the two replicators then build two more in the next thousand seconds, the four build another four, and the eight build another eight. At the end of ten hours, there are not thirty-six new replicators, but over 68 billion. In less than a day, they would weigh a ton; in less than two days, they would outweigh the Earth; in another four hours, they would exceed the mass of the Sun and all the planets combined —if the bottle of chemicals hadn't run dry long before.



Of course, it's unlikely anything like this will happen. Why not? Could yeast cells (or self-reproducing robots) go on reproducing themselves indefinitely? What, if anything, limits the total number of cells or robots that can be built?

Discuss your answers with someone else. Then write a short fictional scenario that illustrates rapid growth and then death of a large population of robots, single-celled organisms, or some other kind of machine or creature.

In your response, be sure to include:

- $\checkmark$  Why or how your fast-growing population reproduces
- $\checkmark$  What four things each individual needs to be able to do
- $\checkmark$  At least one way a fast-growing population can be stopped
- ✓ Some of this unit's focus words (see list to the right)

cell	exponential
divide	microscopic
multiply	nucleus
fungus	nutrient
individual	fuel
reproduction	process
separate	matter