

## How Catalysts Work—a Nanoscale Phenomenon

### Student Worksheet

1. Suppose you break open a rotten egg and the odor overtakes the room. What process is this? \_\_\_\_\_

2. The odor in the egg is caused by H<sub>2</sub>S gas. Explain, in terms of gas concentration, why the odor permeates the entire room.

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3. Define catalyst. \_\_\_\_\_

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4. A clay made of nanoscale particles (particles that range from 1–100 nm in size) adsorbs to the surface of a ball. The ball's molecules are larger than the nanoparticles in the clay. Explain what circumstances would be necessary for diffusion to occur at the surface. \_\_\_\_\_

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5. Does diffusion through a catalyst change the reaction rate? Explain. \_\_\_\_\_

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6. What term describes mud sticking to your shoe? \_\_\_\_\_

7. How does the adsorption to a catalyst increase the chemical reaction rate?

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8. A chemical reaction will only occur if the conditions are right and the reactants come in contact with one another. Use the terms *adsorption*, *diffusion*, and *desorption* to explain how to form a product more quickly than without a catalyst? Explain.

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