

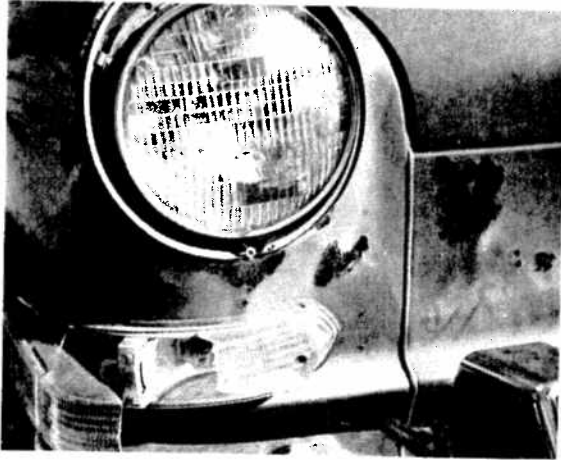
AIM | How can we prevent 21 | unwanted oxidation?

Oxidation takes place in every living thing. Life cannot go on without it. Oxidation in living things is necessary. Some kinds of oxidation, however, are not necessary. In fact, they cause problems. Here are some examples:

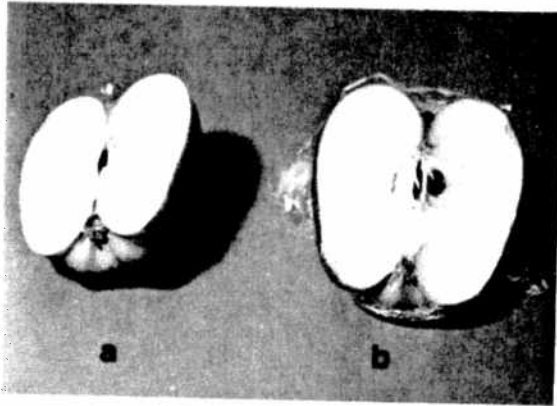
1. *Rust* is one kind of unwanted oxidation. Iron rusts. Rusting can be prevented by covering iron so that oxygen cannot get to it. Some paints and grease can do this. Painting iron or covering it with grease prevents rust.
2. *Stale food* is a result of oxidation. When you wrap food with plastic or foil, you keep away the oxygen. The food stays fresh longer.
3. Slow oxidation can lead to *spontaneous* (spon TAY nee us) *combustion*. That is a fire that starts by itself. Spontaneous combustion takes place when the heat from slow oxidation builds up. The heat has no place to go. If enough heat builds up, a fire can start. One way to prevent spontaneous combustion is to store things in tight containers. This keeps away the oxygen. The other way is to store things so that the heat from slow oxidation can escape and not build up.
4. *Unwanted fires* are caused by carelessness and ignorance. They can be prevented. The safety rules on page 133 show how.

**WHAT DO
THE PICTURES
SHOW?**

The pictures below show some examples of unwanted oxidation. Look at each picture. Read about it. Then answer the questions with each picture.



A.



B.



C.

Rusting causes millions of dollars of damage every year.

1. Did you ever see anything that was ruined by rust? If so, name it.

2. This Aim lists two things that can help prevent rusting. Name them.

This picture shows two apple halves.

3. Which half will stay fresher longer, a or b? _____

4. More oxygen is reaching _____
a, b

5. Oxygen is being kept away from

a, b

6. Wrapping _____
oxidation. speeds up, slows down

This picture shows some oil-soaked rags, paint rollers, and a paint can. They are in a closed closet. The rags are oxidizing.

7. This means that the rags are _____

_____ heat.
taking in, giving off

If enough heat builds up, the rags will burst into flame.

8. What do we call a fire that starts by itself? _____



D.

Some fires are started by nature. We cannot stop them from happening. But most fires are started by people.

This man is camping. He is enjoying nature. But he is throwing away a lighted match.



E.

9. Before you throw away a match, you should be sure the flame is

_____ and the head of
lighted, out

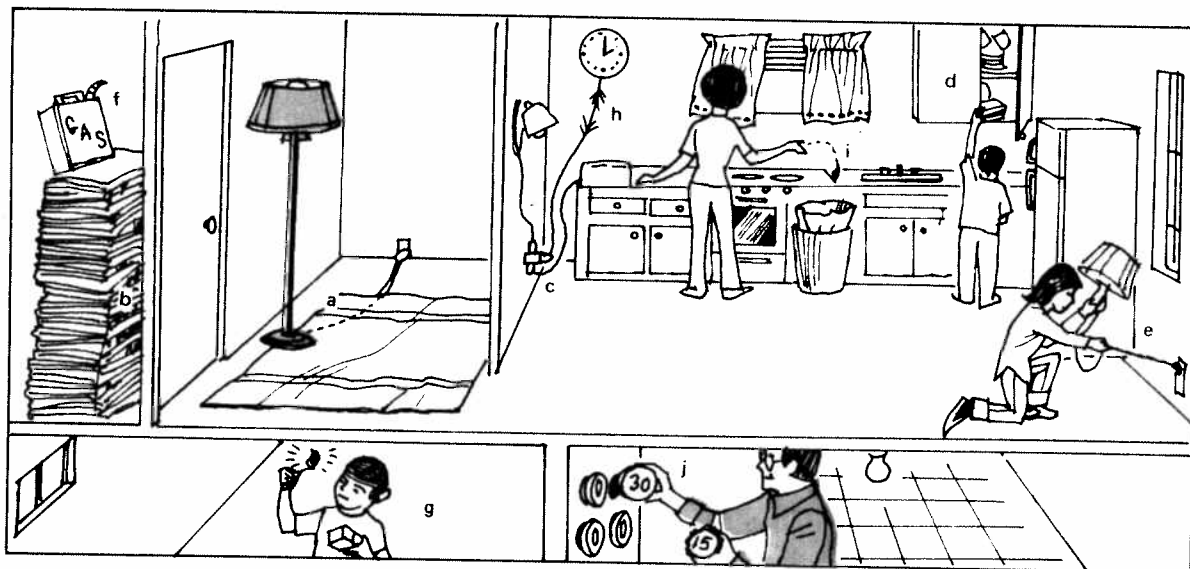
the match is _____.
cool, hot

CHOOSE ONE Choose the correct word or term for each statement. Write your choice in the space.

-
1. Oxidation is an example of a _____ change.
chemical, physical
 2. Oxidation always gives off _____.
heat, spontaneous combustion
 3. Rusting is an example of _____ oxidation.
slow, rapid
 4. Painting iron slows down rusting because the paint keeps away _____.
carbon dioxide, oxygen
 5. When paper oxidizes, it becomes _____.
soft, yellow
 6. "Combustible" means able to _____.
break, burn
 7. Paper _____ combustible.
is, is not
 8. Iron _____ combustible.
is, is not
 9. A flame is a sign of _____ oxidation.
rapid, slow

PREVENTING FIRE IN YOUR HOME

Do you know how to prevent fire? Each letter in this picture shows a way that fire can start in your home. Under the picture are ten safety rules for preventing fire. Write the letter from the picture that best matches each safety rule.



SOME FIRE SAFETY RULES.

1. Don't play with matches. _____
2. Keep matches away from children. _____
3. Be sure that matches are completely out and cool before you throw them away.

4. Do not store newspapers in a closet. _____
5. Do not store liquids that can burn. _____
6. Replace worn electrical wires. _____
7. Don't plug in too many wires in one outlet. _____
8. Never replace a fuse with a stronger fuse. Use the same size. _____
9. Never run wires under a carpet. _____
10. Unplug an appliance by pulling the plug. Never pull the wire. _____

The best way to fight fires is to *prevent* them from happening.

Learn not to burn!

TRUE OR FALSE Write T on the line next to the number if the sentence is true.
Write F if the sentence is false.

-
1. _____ There is burning taking place in your body.
 2. _____ The burning in your body gives off heat.
 3. _____ The burning in your body gives off light.
 4. _____ Burning and oxidation mean the same.
 5. _____ Oxidation in living things is necessary.
 6. _____ Rusting is a kind of unwanted oxidation.
 7. _____ Oxidation helps food to stay fresh.
 8. _____ Food spoils because it gives off oxygen.
 9. _____ Food keeps fresher when it is wrapped.
 10. _____ Paint makes iron rust.

MATCHING Match the two lists. Write the correct letter on the line next to each number.

-
- | | |
|---------------------------------|----------------------------------|
| 1. _____ people | a) no flame and very little heat |
| 2. _____ slow oxidation | b) fire without outside help |
| 3. _____ rapid oxidation | c) iron oxide |
| 4. _____ spontaneous combustion | d) flame and much heat |
| 5. _____ chemical name for rust | e) start most fires |

REACHING OUT

1. Rusting can be dangerous. Explain why.
2. Some safety rules for preventing fires are listed on page 133. How many other safety rules can you think of?

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1. _____
 2. _____
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