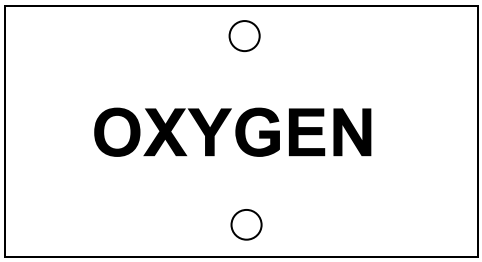
CARD ACTIVITY - REACTION WITH OXYGEN

Teacher instructions

- The aim of this activity is to help students to internalise the fact that when compounds react with oxygen, the elements within the compound effectively break apart and then each react separately with oxygen.
- Print onto card using one colour for oxygen and one colour for all the other elements – it may be best to laminate these cards.
- Punch two holes into each laminated card, one at the centre top and one at the centre bottom.



- For impact, this should be done as a *teacher-led* activity.

1) Start with reaction of elements:
   - for reactions of elements with oxygen pupils should pick up the element card (e.g. iron, silicon, hydrogen, carbon, copper, calcium, sulfur, nitrogen)
   - then when you ask them to "burn" that element they should join it to the oxygen card using a treasury tag
2) Now look at methane with them:
   - introduce methane as a compound made from H and C and get them to join a C card to an H card with a treasury tag
   - now ask them to show what happens when methane reacts with oxygen (many students will simply join an oxygen card to the already joined C and H, effectively making "methane oxide" – a very common misconception)
   - stress to students that the C and H must separate and each react with the oxygen to form carbon dioxide and water, so they should separate the C and H in the methane and then join each of them to oxygen cards separately.
3) Now try other compounds (and mix in some elements to keep them thinking)
   - each time they should make the compound first by joining a card of each element in the compound together
   - once they have held these up, ask them to "burn them" (they should then separate the cards and join each one to oxygen)
   - you could ask them to write a word equation after each one
   - possible compounds that word with the cards are below (mix in some of the elements as well; compounds with oxygen already in them will make them think to realise that the O in the compound becomes part of the O in the products):
     - methane CH_4 (gives $CO_2 + H_2O$)
     - hydrogen sulfide H_2S (gives $SO_2 + H_2O$)
     - ethane C_2H_6 (gives $CO_2 + H_2O$)
     - ethanol C_2H_5OH (gives $CO_2 + H_2O$)
     - thiol CH_3SH (gives $CO_2 + H_2O + SO_2$)
     - hydrazine N_2H_4 (gives $NO_2 + H_2O$)
     - propane C_3H_8 (gives $CO_2 + H_2O$)
     - silane SiH_4 (gives $SiO_2 + H_2O$)
     - methanol CH_3OH (gives $CO_2 + H_2O$)
     - octane C_8H_{18} (gives $CO_2 + H_2O$)

CARBON	**HYDROGEN**
NITROGEN	**SULFUR**
COPPER	**CALCIUM**
IRON	**SILICON**

OXYGEN	**OXYGEN**
OXYGEN	**OXYGEN**