

Chain Reaction

A game about carefully curating a collection of elements to score the most points, while letting the desired chemical reactions happen and preventing undesirable reactions.

Players	2
Play time	30m-1h

What's in the box?

Element cards:

- Fe (8)
- C (8)
- O₂ (20)
- S (6)
- H₂ (18)
- Na (10)
- Cl₂ (5)
- N₂ (10)
- ²³⁵U (5)
- neutron (2)

Compound cards:

- A few cards for each compound (see below for a list of compounds). If there aren't enough, use a pen and paper to keep track of any extra compounds.
- At least five "extra neutron" cards.

A plentiful supply of coins. If you run out, use any small object as a replacement.

Objective

At the end of the game, players score 1 point for every common compound, 3 points for every uncommon compound and 6 points for every rare compound. However, there's a catch. At the start of the game, each player must choose only one compound from each category to score points in - everything else is worth zero. You can't change this during the game.

In the event of a tie, the player with the most total compounds (excl. neutrons) wins.

The game ends when the draw pile is exhausted. Remove some cards for a shorter game.

Setup

The player who was most recently in a laboratory goes first. This player starts with 2 coins, and the other player starts with 5 coins.

Both players secretly choose exactly **one** common, **one** uncommon, and **one** rare compound - these are the compounds you want to research as a scientist, and the only ones you will score points for collecting.

Separate out the element cards from the compound cards. Shuffle the element cards. Deal out eight cards in one line, with the draw pile at one end.

On Your Turn

You may either:

- Draw element card(s).
- Sell compound(s) for coins.

Also, at any point during your turn (including the start/end), you may:

- Pay 2 coins to ship a compound away.
- Pay 1-3 coins to destroy an element.

Draw Element Cards

The element furthest from the draw pile costs 0 coins, then 1, then 2, and so on to 7 coins. Choose an element and add it to your laboratory. Move the cards along to fill the gap that has emerged and turn the next card face-up - there should always be 8 cards face-up. Trigger all reactions immediately. If at least one reaction triggered, draw again. There is no limit to how many times you can keep drawing, so long as each time a reaction triggers!

Sell Compounds

Choose one type of compound (e.g. H₂O). Sell as many of that compound as you want for coins.

Common	2 coins
Uncommon	5 coins
Rare	10 coins

Ship Compounds (2 coins)

Ship one compound into a truck, where it will no longer react. You can still score points or sell this for coins, but you cannot bring it back into your laboratory to react further.

Destroy Elements (1-3 coins)

If you don't want the other player gaining an element, you can destroy it. Destroying one of the two elements furthest from the draw pile costs 1 coin, destroying one of the two elements closest to the draw pile costs 3 coins, and destroying any of the four middle elements costs 2 coins each.

Reactions & Compounds

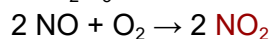
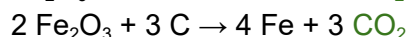
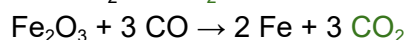
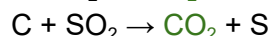
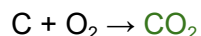
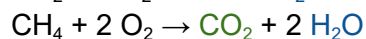
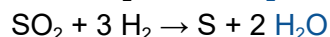
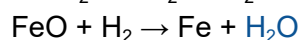
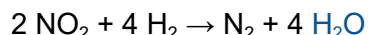
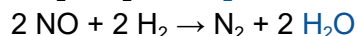
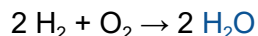
All chemical reactions happen immediately, and are not optional. If the preconditions for two reactions are satisfied simultaneously, always trigger the reaction that requires the fewest elements and compounds first (e.g. $4 \text{ Na} + \text{CO}_2 \rightarrow 2 \text{ Na}_2\text{O} + \text{C}$ counts as five). If there is a tie, it is chosen at random. If all players forget to trigger a reaction (doing this deliberately is considered cheating), and the preconditions are no longer met, do not go back and trigger it.

There are **34** reactions. A good knowledge of these reactions will help you strategise.

Common

H_2O	CO_2	NO_2
----------------------	---------------	---------------

Reactions producing common compounds:



Recipes that also produce uncommon or rare compounds are not shown here. Identify them by the colours of the elements in the sections below.

Uncommon

NaCl	CS_2	Na_2O_2	H_2S	NO	FeCl_3	FeS	NH_3	HCl	NaH
---------------	---------------	-------------------------	----------------------	-------------	-----------------	--------------	---------------	--------------	--------------

Reactions producing uncommon compounds:

$2 \text{ Na} + \text{Cl}_2 \rightarrow 2 \text{ NaCl}$
 $\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{H}_2\text{O}$
 $\text{C} + 2 \text{ S} \rightarrow \text{CS}_2$
 $2 \text{ Na} + \text{O}_2 \rightarrow \text{Na}_2\text{O}_2$
 $\text{H}_2 + \text{S} \rightarrow \text{H}_2\text{S}$
 $\text{N}_2 + \text{O}_2 \rightarrow 2 \text{ NO}$
 $4 \text{ NH}_3 + 5 \text{ O}_2 \rightarrow 4 \text{ NO} + 6 \text{ H}_2\text{O}$
 $2 \text{ Fe} + 3 \text{ Cl}_2 \rightarrow 2 \text{ FeCl}_3$
 $\text{Fe} + \text{S} \rightarrow \text{FeS}$
 $\text{N}_2 + 3 \text{ H}_2 \rightarrow 2 \text{ NH}_3$
 $\text{H}_2 + \text{Cl}_2 \rightarrow 2 \text{ HCl}$
 $2 \text{ Na} + \text{H}_2 \rightarrow 2 \text{ NaH}$

Rare

SO_2	CH_4	NaOH	Fe_2O_3	Na_2O
---------------	---------------	---------------	-------------------------	-----------------------

Reactions producing rare compounds:

$2 \text{ H}_2\text{S} + 3 \text{ O}_2 \rightarrow 2 \text{ SO}_2 + 2 \text{ H}_2\text{O}$
 $4 \text{ FeS} + 7 \text{ O}_2 \rightarrow 2 \text{ Fe}_2\text{O}_3 + 4 \text{ SO}_2$
 $\text{CO}_2 + 4 \text{ H}_2 \rightarrow \text{CH}_4 + 2 \text{ H}_2\text{O}$
 $2 \text{ Na} + 2 \text{ H}_2\text{O} \rightarrow 2 \text{ NaOH} + \text{H}_2$
 $2 \text{ NaCl} + 2 \text{ H}_2\text{O} \rightarrow 2 \text{ NaOH} + \text{H}_2 + \text{Cl}_2$
 $2 \text{ Na}_2\text{O}_2 + 2 \text{ H}_2\text{O} \rightarrow 4 \text{ NaOH} + \text{O}_2$
 $\text{NaH} + \text{H}_2\text{O} \rightarrow \text{NaOH} + \text{H}_2$
 $4 \text{ Fe} + 3 \text{ O}_2 \rightarrow 2 \text{ Fe}_2\text{O}_3$
 $4 \text{ Na} + \text{CO}_2 \rightarrow 2 \text{ Na}_2\text{O} + \text{C}$

Nuclear Fission

^{235}U	neutron
------------------	---------

$^{235}\text{U} + \text{neutron} \rightarrow 3 \text{ neutrons} + \text{instant 10 points}$

Use the “extra neutron” pieces. There are only 5 ^{235}U cards, so you don’t need to give out more neutrons than there are remaining uranium cards, as this has no effect on the game. To keep track of uranium that has reacted, move it to the “shipped” space (since uranium can’t be shipped away normally).

Be careful, there’s only 2 neutrons in the element deck, so it may be hard to get your chain reaction going!