

THE MISSION:

Four different explosives experts are suspected for having caused an explosion that occurred earlier this week in a Montreal laboratory!

Each "expert" solely uses one type of explosive. Thus, being able to identify which explosive was employed would enable us to determine who is responsible.

After reviewing the suspects' files, work with the clues to help solve the mystery. We are depending on you!

TAKE NOTES OF THE EXPLOSIVES!!!

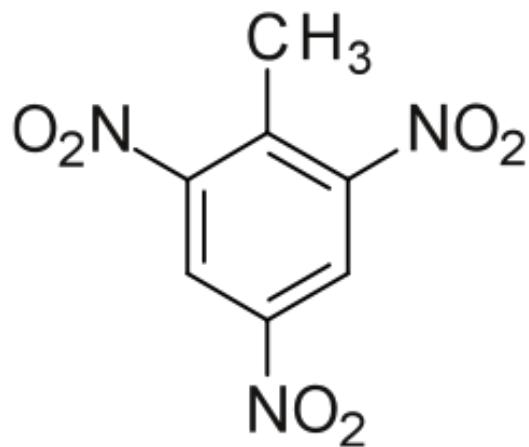




SUSPECT 1: **Scientist Cage**

Specialty: TNT
(aka: trinitrotoluene,
2-methyl-1,3,5-trinitrobenzene)

Formula: **$C_7H_5N_3O_6$**

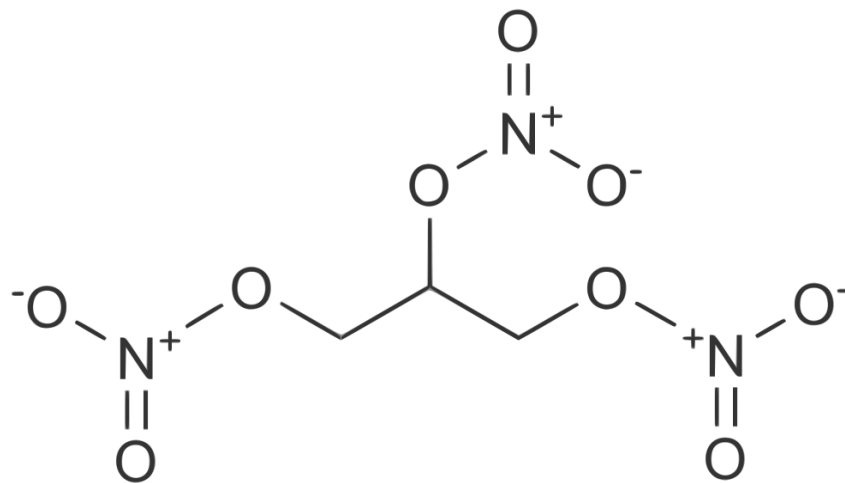




Suspect 2: **Gargamel**

Specialty: Nitroglycerin
(aka 1,2,3-trinitroxypropane)

Formula: **$C_3H_5N_3O_9$**

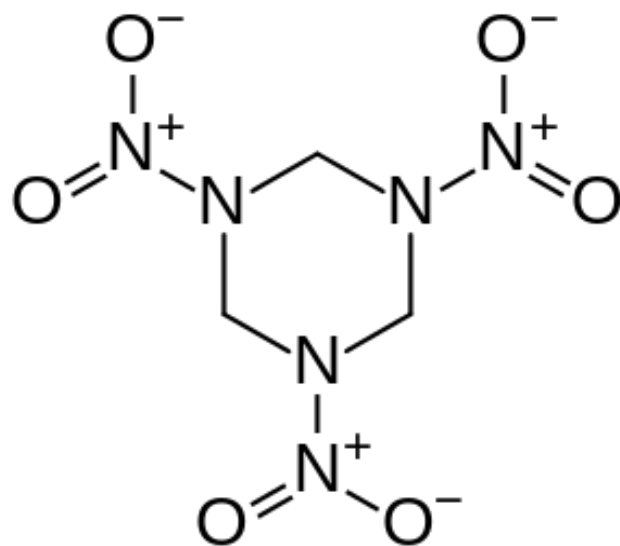




Suspect 3: **Beaker**

Specialty: RDX (aka. hexogen, aka. 1,3,5-trinitroperhydro-1,3,5-triazine)

Formula: **$C_3H_6N_6O_6$**

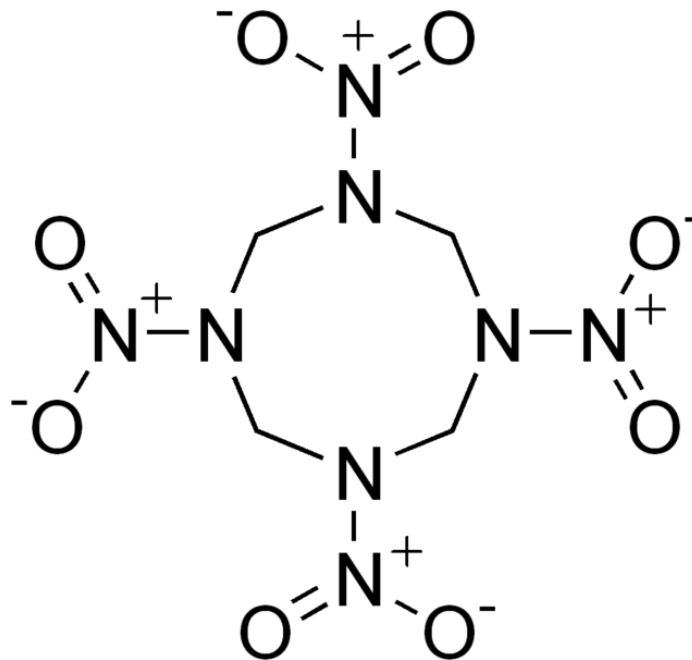




Suspect 4: **Cruella Deville**

Specialty: HMX (aka. octogen, aka. octahydro-1,3,5,7-tetrazocine)

Formula: **C₄H₈N₈O₈**



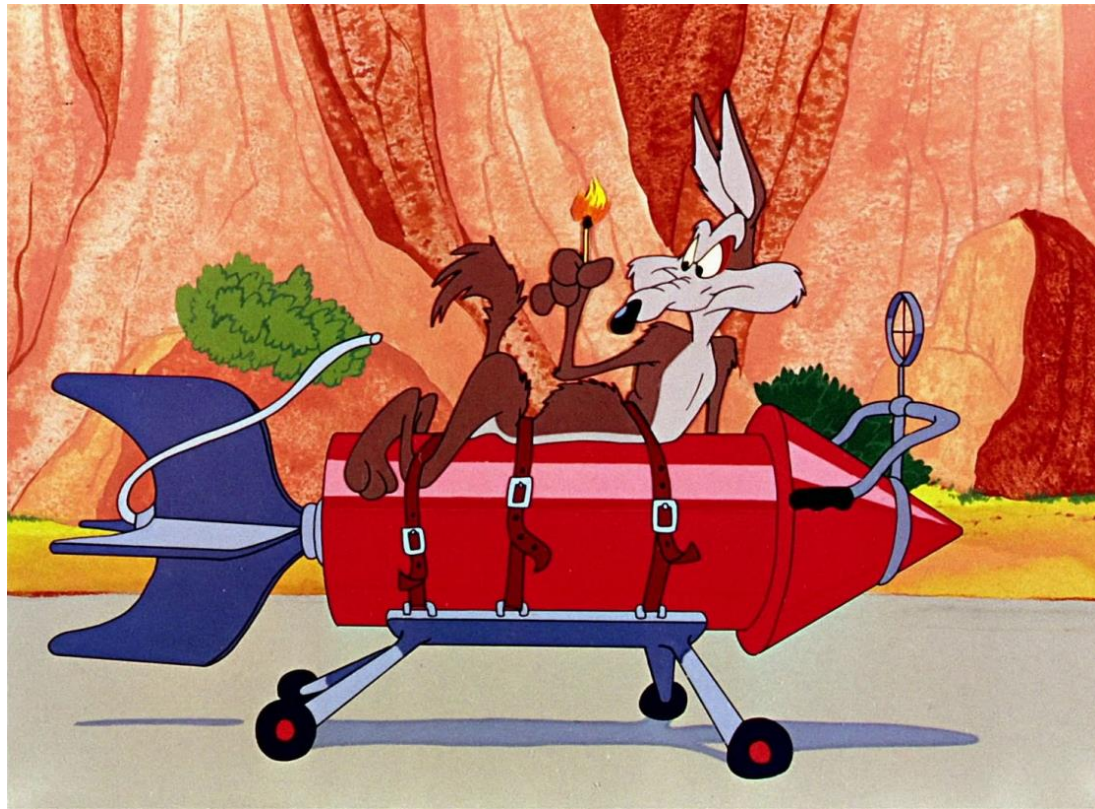
CLUE # 1

Inspector Gadget has found the molar mass of the explosive is between **220 and 300 g/mol!**



CLUE # 2

Wile E. Coyote has found the explosive employed is approximately **38%** by mass nitrogen.



CLUE # 3

Sir Toad has indicated the **EMPIRICAL FORMULA** for the explosive is **$\text{CH}_2\text{N}_2\text{O}_2$** .



CLUE # 4:

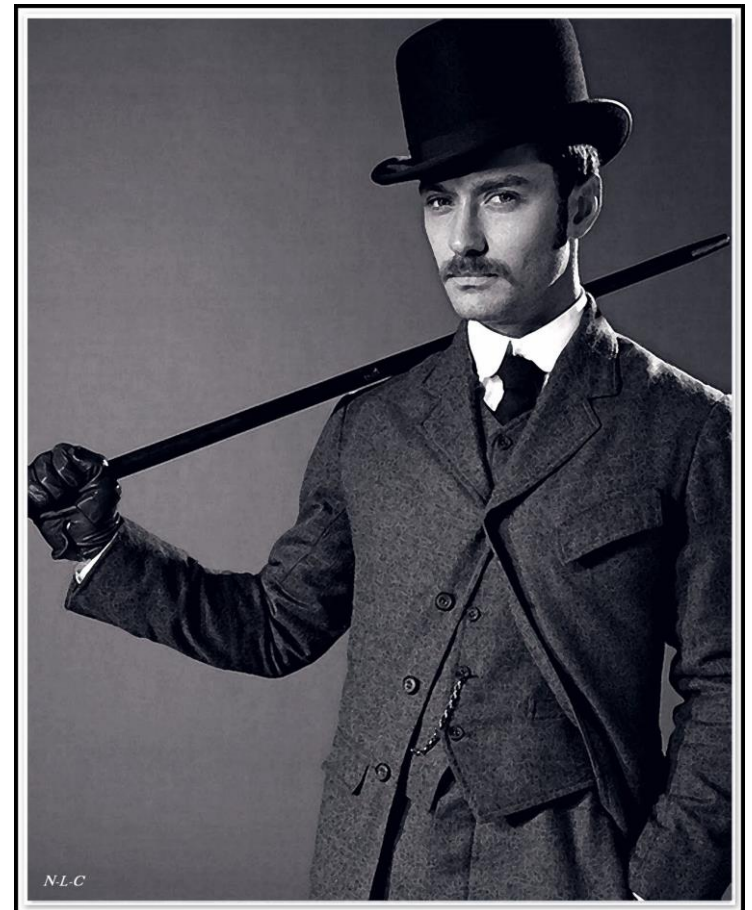
Old School Detective has found the explosive employed is approximately **42.3%** by mass oxygen.



CLUE # 5:

Watson indicates the explosive employed contains **96 g** oxygen/mole of the explosive compound.

I think he's got it!!!





BUSTED!

Compound = **RDX**

Formula = **$\text{C}_3\text{H}_6\text{N}_6\text{O}_6$**

Taking it further: (work in progress)

Now think back to the tools and important concepts you used to solve the mystery.

Make a list of the tools/concepts and important any important equations you used.

Add these to your TOOLBOX.

Prepare a concept mapping outlining the manner in which all these concepts are interrelated.