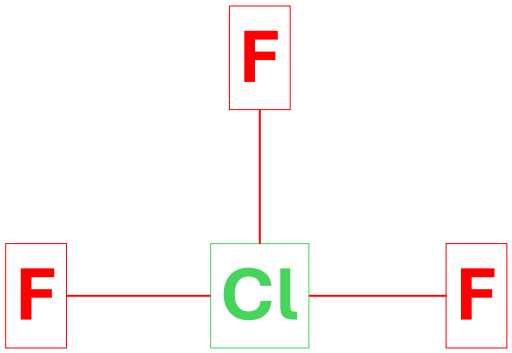
Chemical of the Week – Part 2

Hazard Profile	
Chemical Name and Pseudonyms	Chlorine trifluoride, Chlorotrifluoride, Trifluorochlorine
UN Number	1749
Chemical Formula	ClF_3
Hazards	Toxic, water reactive, air reactive, oxidizer, corrosive
NFPA Hazard Class (H-F-R-Ⓞ)	4 – 0 – 3 – OX, ~~W~~
PPE Considerations	Flash protective CPC with SCBA
Fire Fighting Considerations	CO_2, Dry chemical
Decontamination	Ventilation, flushing water
Detection and Monitoring	Colorimetric, spectroscopy, PID (IP = 13.00 eV), electrochemical sensor
Chemical and Physical Properties	
Physical State	Colorless gas or green-yellow liquid below 53°F. Shipped as liquified compressed gas
Vapor Pressure	1.4 ATM
Boiling Point	53°F
Vapor Density	3.21
Specific Gravity	1.77 (reacts with water)
Miscibility	Reacts with water
Flash Point	-
LEL/UEL	- / -%
Autoignition Temp	-
pH	-
Toxicity	
IDLH	20 ppm
LC50	178 ppm/1H
LD50	-
AEGL1/AEGL 2/AEGL (10 Min)	.12/ 8.1 / 84 ppm
Emergency Response Planning Guide (ERPG) 1/2/3	.1 / 1 / 10 ppm
Protective Action Criteria (PAC) 1/2/3	.12 / 2 / 21 ppm
PEL/REL/STEL	.1 / .1/ .1 ppm
Radioactive (Yes/No)	No
Medical	
Toxicological Considerations	Toxic inhalation by inhalation, ingestion (liquid), and contact

Signs/Symptoms of Exposure	Respiratory/skin/eye irritation, burns, pulmonary edema
Medical Treatment	Fresh air, water flush, treat symptomatically,

Other Information

Immediate explosive reaction on contact with hydrocarbons or halocarbons. Solutions with carbon tetrachloride are capable of detonation, while solutions with nitroaryl compounds or highly chlorinated compounds are extremely shock-sensitive. Violent, sometimes explosive reaction with hydrogen containing materials or fluoroamino compounds. Ignition with fibrous materials. Explosive gaseous products are formed with ammonium fluoride or ammonium hydrogen fluoride. Ignition occurs on contact with iodine, boron-containing materials, fibrous or finely divided materials. Violent reactions occur with mineral acids, chromium trioxide, ruthenium metal, selenium tetrafluoride. Chlorine trifluoride is a hypergolic oxidizer and contact with some metals and their oxides. nonmetals, salts will result in a violent reaction often followed by ignition.

Chemical Structure