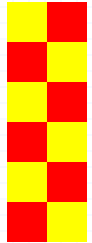




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SCIC 2025:

Fire Statistics and Case Studies

CPT Firdaus Zulkfle
Incident Analyst
Fire Investigation Unit

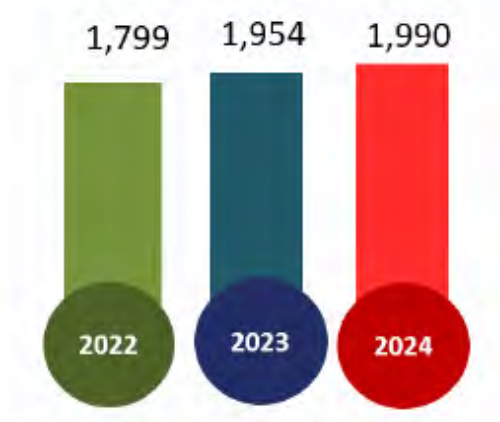


Scope

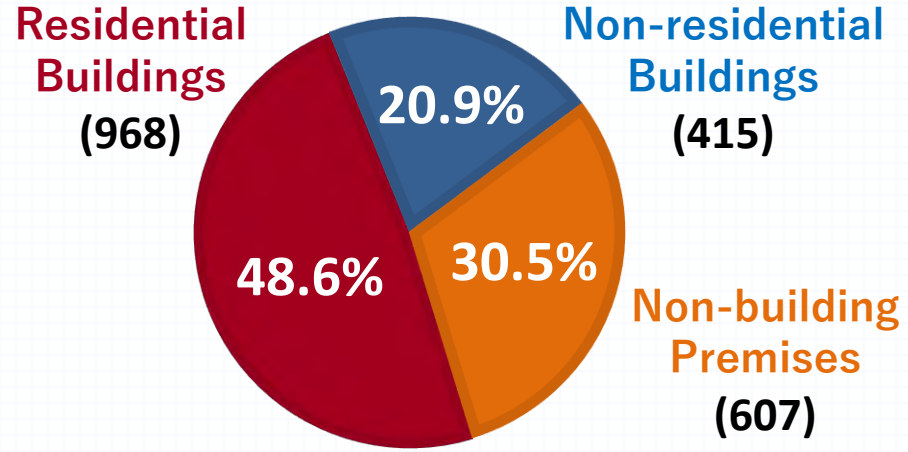
- Annual Fire Statistics for 2024
- Case Studies of Fire Incidents



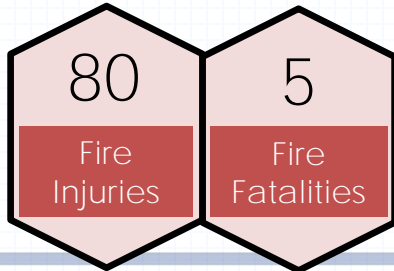
Total Fire Calls



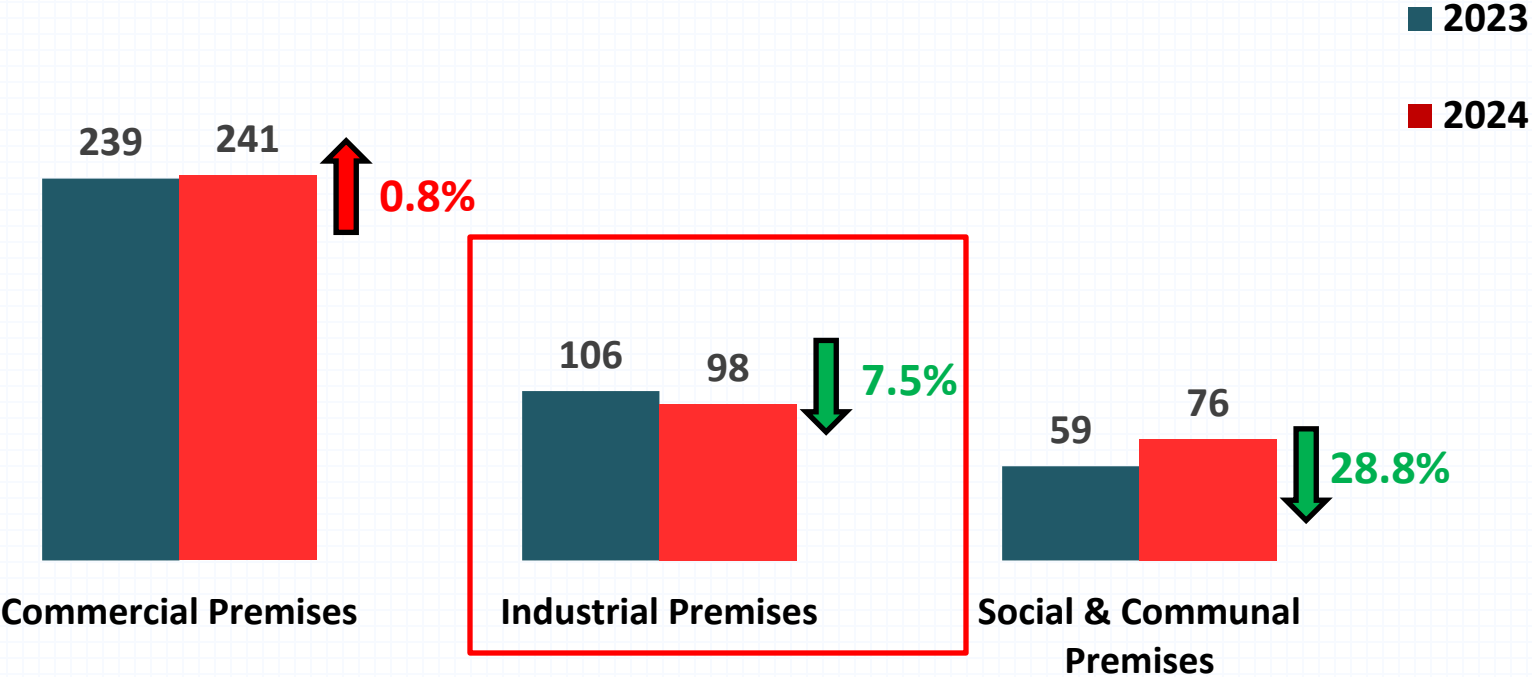
Breakdown of Fire Calls (2024)



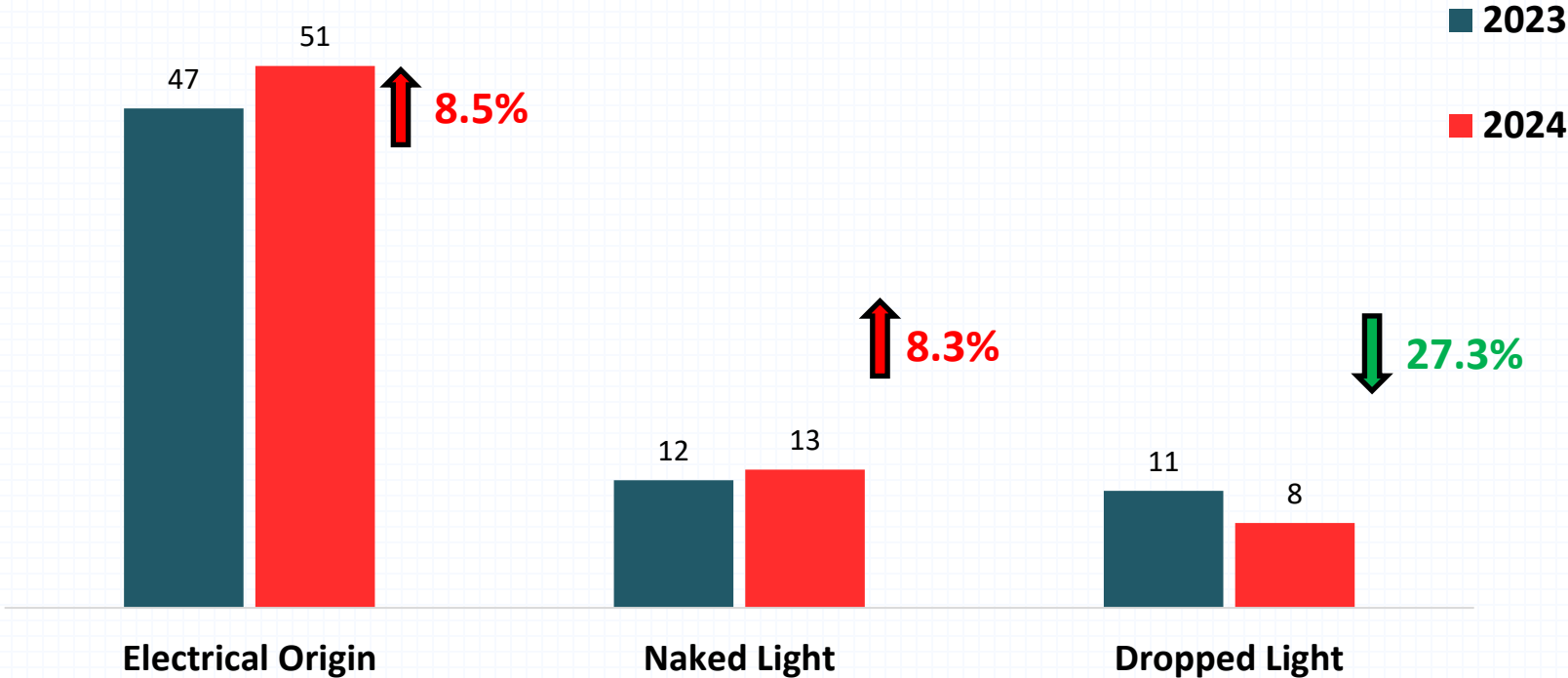
Total Injuries/Fatalities (2024)



Breakdown of Fires at Non-Residential Buildings



Top 3 Types of Fire in Industrial Premises



Year-to-Year Comparison of Fires in Industrial Premises

Description	2023	2024	Absolute Change	% Change
Warehouses	31	26	-5	-16.1
Refineries	13	13	0	0.0
Worksite Structures	0	4	+4	+400
Factories	41	28	-13	-31.7
Others ¹	21	27	+6	+28.6
Total	106	98	-8	-7.5

¹Include shipyard, worksite office, store, etc.

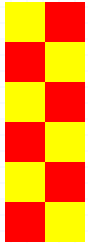




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Case Studies

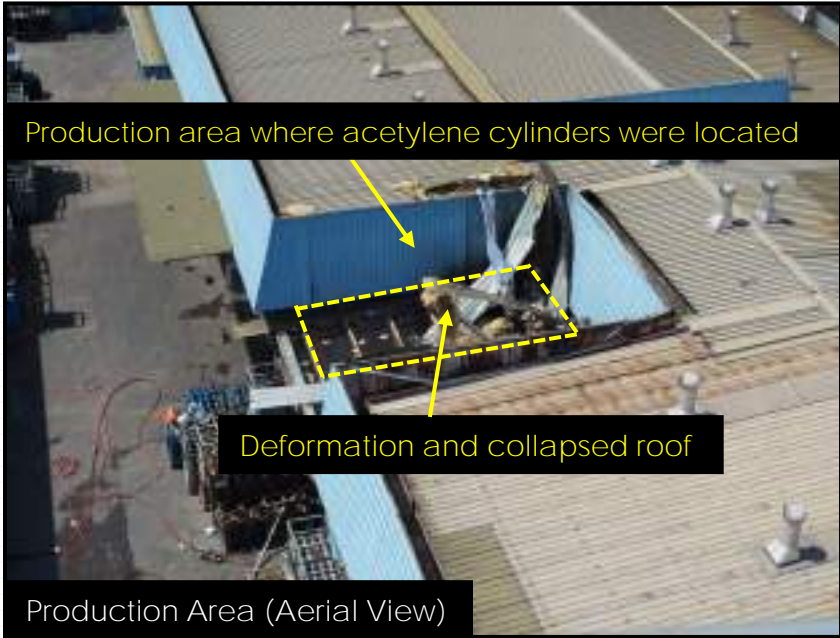


Case Study 1: Acetylene Gas Fire (30 Dec 2022)

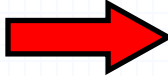
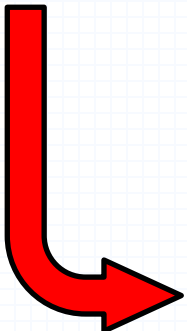
- Fire involved:
 - Gas cylinders in the production area of a gas filling company
 - Company manufactures industrial gases
- Method of extinguishment:
 - Fire extinguished by SCDF using 1 x 38mm water jet
- Cause of fire:
 - Point of ignition was traced to a wiring / connection where a localized and distinct arc bead was found
 - Arcing had likely served as an ignition source and caused the fire outbreak in the presence of a flammable environment (i.e., acetylene gas)
 - Circumstances that led to an electrical anomaly may include, but is not limited to:
 - wear and tear, short circuiting, loose connections, or inherent defects of the electrical sockets, wirings or/and components, which subsequently led to ignition of accumulated acetylene gas
- Injuries:
 - 1 x casualty sustained extensive cutaneous burns and succumbed to his injuries



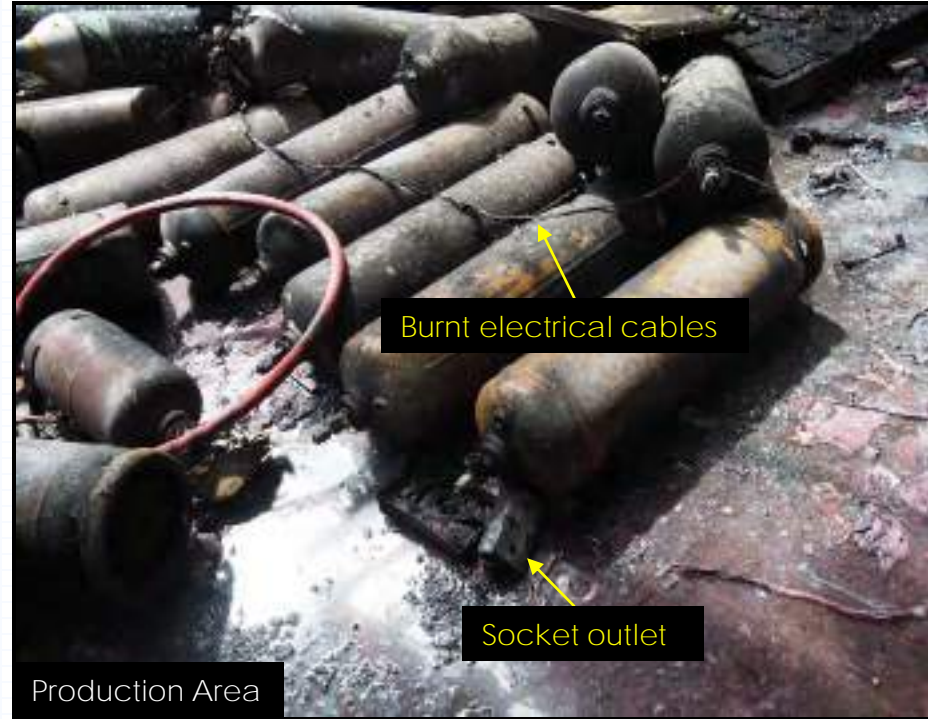
Case Study 1: Acetylene Gas Fire (30 Dec 2022)



Case Study 1: Acetylene Gas Fire (30 Dec 2022)



Case Study 1: Acetylene Gas Fire (30 Dec 2022)



Case Study 2: Chemical Warehouse Fire (5 Jul 2023)

- Fire involved:
 - A warehouse storing various chemicals
 - Company deals with production and distribution of various chemicals. The affected warehouse stored chemical products pending delivery to their clients
- Method of extinguishment:
 - Fire extinguished by SCDF using 3 x foam jets, 2 x Unmanned Firefighting Machines (UFMs), 2 x ground monitors
- Cause of fire:
 - Multiple chemicals including flammable liquids and solids were stored in warehouse
 - Fire originated from middle section of warehouse
 - Multiple hypotheses:
 1. Electrical origin at reach truck and/or its connected charging accessories, as severe oxidation damage was observed on these appliances. Presence of round and smooth beads were also found at localized points on various electrical components of the reach truck's charging accessories
 2. Spontaneous combustion from stored chemicals, as chemicals with self-heating potential and stored within the middle section of the warehouse included but were not limited to Hydroxyethyl Methacrylate (HEMA) and Ethyleneglycol Dimethacrylate(EDMA)

Case Study 2: Chemical Warehouse Fire (5 Jul 2023)



Case Study 2: Chemical Warehouse Fire (5 Jul 2023)



Oxidation and deformation of steel beams around the middle section of warehouse



The affected reach truck



Case Study 3: Chemical Waste Fire (7 Aug 2024)

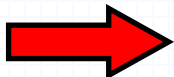
- Fire involved:
 - Waste materials in the open storage area of a waste management facility
 - Waste materials comprised ignitable chemicals, scrap metal, Intermediate Bulk Containers (IBCs), and other miscellaneous items
- Method of extinguishment:
 - Fire extinguished by SCDF using 1 x 38mm water jet
- Cause of fire:
 - The most probable cause of fire was believed to be **accidental due to sparks/frictional heat** from the mechanical movement of an excavator's bucket
 - An IBC containing untreated water as well as presence of isopropyl alcohol and other flammable liquids leaked onto the floor of the sorting yard
 - Frictional heat between excavator bucket and ground caused a spark which possibly ignited the isopropyl alcohol that leaked from the IBC
- Safe Management of Waste Materials:
 - For more information, do refer to NEA's website: https://www.nea.gov.sg/docs/default-source/our-services/waste-management/20221223_advisory-on-safe-management-of-waste-materials.pdf



Case Study 3: Chemical Waste Fire (7 Aug 2024)



Case Study 3: Chemical Waste Fire (7 Aug 2024)



Thank You

