

Houston Fire Department

PPE Risk Assessment Document

Type of duties performed:

Standard Structural Fire Fighting Duties
Interior Fire Fighting
High-Rise Fire Fighting
Fire Victim Rescue
Fire Suppression
Vertical Ventilation
Horizontal Ventilation
Forcible Entry
Overhaul
Building System Control
Vehicle Rescue
Technical Rescue
Hazardous Materials Response
Aircraft Rescue Fire Fighters
Emergency Medical First Responder

Type of PPE Needed: Structural-Yes Proximity- No

Frequency of use of ensemble elements:

Frequency of event is defined as:

- Rare – (0 to 1%)
- Routine – (1% to 7%)
- Daily – (7% to 100%)

HFD Response from January 1, 2016 - December 31, 2018

Usage of proximity PPE due to high levels of radiant heat,	0.00%	Rare
Usage of structural PPE during a structural fire response, per HFD SOG	100.00%	Daily

HFD uses structural PPE for fire response per HFD guidelines 100% of the time.

Type of PPE Needed: Structural-Yes Proximity-No

Organization's experiences:

PPE Performance at Incidents: See nature of emergencies on chart.

- Chart: Three-year frequency of Fire events for HFD.

Frequency of experiences and/or events based specifically on this emergency response data and is explained utilizing the following charts:

Frequency of event is defined as:

- Rare – (0 to 1%)
- Routine – (1% to 7%)
- Daily – (7% to 100%)

Houston Fire Response Report									
Nature of Emergency	2016			2017			2018		
	Total Incidents	Percentile	Frequency	Total Incidents	Percentile	Frequency	Total Incidents	Percentile	Frequency
Aircraft fire	3	0.06	Rare	0	0.00	Rare	1	0.02	Rare
Brush or brush-and-grass mixture fire	150	2.90	Routine	123	2.29	Routine	148	2.50	Routine
Building fire	980	18.92	Daily	1000	18.62	Daily	1132	19.15	Daily
Camper or recreational vehicle (RV) fire	4	0.08	Rare	10	0.19	Rare	6	0.10	Rare
Chimney or flue fire, confined to chimney or flue	6	0.12	Rare	20	0.37	Rare	15	0.25	Rare
Commercial Compactor fire, confined to rubbish	1	0.02	Rare	6	0.11	Rare	12	0.20	Rare
Construction or demolition landfill fire	6	0.12	Rare	3	0.06	Rare	6	0.10	Rare
Cooking fire, confined to container	405	7.82	Daily	462	8.60	Daily	550	9.30	Daily
Cultivated vegetation, crop fire, Other	4	0.08	Rare	3	0.06	Rare	5	0.08	Rare
Dumpster or other outside trash receptacle fire	456	8.80	Daily	432	8.04	Daily	390	6.60	Routine
Fire in mobile home used as fixed residence	6	0.12	Rare	14	0.26	Rare	5	0.08	Rare
Fire in mobile prop used as a fixed struc, Other	2	0.04	Rare	1	0.02	Rare	2	0.03	Rare
Fire in motor home, camper, recreational vehicle	11	0.21	Rare	3	0.06	Rare	10	0.17	Rare
Fire in portable building, fixed location	6	0.12	Rare	5	0.09	Rare	10	0.17	Rare
Fires in structure other than in a building	111	2.14	Routine	110	2.05	Routine	124	2.10	Routine
Forest, woods or wildland fire	23	0.44	Rare	22	0.41	Rare	20	0.34	Rare
Fuel burner/boiler malfunction, fire confined	10	0.19	Rare	18	0.34	Rare	17	0.29	Rare
Garbage dump or sanitary landfill fire	13	0.25	Rare	17	0.32	Rare	16	0.27	Rare
Grass fire	218	4.21	Routine	235	4.38	Routine	270	4.57	Routine
Incinerator overload or malfunction, fire confined	2	0.04	Rare	10	0.19	Rare	12	0.20	Rare
Mobile property (vehicle) fire, Other	198	3.82	Routine	273	5.08	Routine	293	4.96	Routine
Natural vegetation fire, Other	116	2.24	Routine	118	2.20	Routine	183	3.10	Routine
Off-road vehicle or heavy equipment fire	19	0.37	Rare	14	0.26	Rare	21	0.36	Rare
Outside equipment fire	43	0.83	Rare	61	1.14	Rare	61	1.03	Rare
Outside gas or vapor combustion explosion	3	0.06	Rare	2	0.04	Rare	1	0.02	Rare
Outside rubbish fire, Other	358	6.91	Routine	399	7.43	Daily	481	8.14	Daily
Outside rubbish, trash or waste fire	616	11.89	Daily	626	11.66	Daily	572	9.68	Daily
Outside stationary compactor/compacted trash fire	5	0.10	Rare	12	0.22	Rare	7	0.12	Rare
Outside storage fire	10	0.19	Rare	14	0.26	Rare	16	0.27	Rare
Passenger vehicle fire	1160	22.39	Daily	1046	19.48	Daily	1064	18.00	Daily
Rail vehicle fire	1	0.02	Rare	1	0.02	Rare	4	0.07	Rare
Road freight or transport vehicle fire	64	1.24	Rare	73	1.36	Rare	86	1.45	Rare
Self-propelled motor home or recreational vehicle	3	0.06	Rare	2	0.04	Rare	0	0.00	Rare
Special outside fire, Other	76	1.47	Rare	89	1.66	Rare	66	1.12	Rare
Trash or rubbish fire, contained	135	2.61	Routine	146	2.72	Routine	306	5.18	Routine
Water vehicle fire	6	0.12	Rare	0	0.00	Rare	0	0.00	Rare
	2016			2017			2018		
Total Fire Responses	5181			5370			5912		

Type of PPE Needed: Structural-Yes Proximity-No

Incident

Operations:

Guidelines and policies are an important tool for the Houston Fire Department and are mandated by the Fire Chief. As such, the following HFD Guidelines apply in answering Question # 4.

Primary Objectives (in order):

- A. Firefighter Safety
- B. Life Safety/Rescue
- C. Incident Control/Mitigation
- D. Property Conservation/Environmental Concerns

These objectives will be accomplished using a risk vs. benefit analysis. Firefighters should only take large risks when there is a large benefit at stake. Small benefits only deserve a small amount of risk.

I-00 Volume I

I-01 Rules & Regulations

I-16 Motor Vehicle Accidents

I-23 Fire Station Management

I-24 Uniform Guideline

I-25 Occupational Wellness Program

I-47 Classified TrainingII-02 Protective Clothing (Logistics/Prof. Devel.)

II-00 Volume II Glossary

II-03 Electronic Accountability System

II-04 Highrise Survey

II-05 Highrise Firefighting (with Appendix)

II-06 Incident Management

II-07 Evacuation and Rescue Boat Operations

II-08 Rope Rescue

II-09 Trench Rescue Incidents

II-10 Tunnel Rescue Incidents

II-11 Water Rescue & Evacuation

II-12 Confined Space Rescue

II-14 Hazardous Chemicals Right to Know

II-15 Hazardous Materials Incidents

II-17 Rehabilitation Sector

II-18 Airport Guideline

II-19 Tactical Evaluation and Assessment Plan

II-20 Pre-incident Apartment Diagramming

II-21 Rapid Intervention

II-22 Africanized Honey Bee Incidents

II-23 High Angle Rescue

II-24 MVA and Industrial Accident Extrication

II-25 Emergency Mobilization Plan

II-26 DTO-FTO Guideline

II-27 Chemical Exposure Evaluation

II-28 Stokes Basket

II-29 Civil Disorders

II-30 Elevator Operations

II-31 Hydrant Inspection

II-32 Developing Water Supplies
II-33 Hurricane Guideline
II-34 Water Supply Officer
II-36 Decontamination
II-37 Shipboard Firefighting
II-38 Reporting of Automatic Alarms
II-39 SCBA Inspections
II-41 Weapons of Mass Destruction
II-42 May-Day
II-43 Thermal Imaging Camera
II-44 Fire Hose
II-47 Structure Fire Incidents
II-49 Air Management

Type of PPE Needed: Structural-Yes Proximity-No

☐ **Geographic location and climate:**

Houston, seat of Harris County, Texas, is located on the upper Gulf coastal plain at 9522' West and 2946' North, 50 miles from the Gulf of Mexico.

TOPOGRAPHY: Houston lies largely in the northern portion of the Gulf coastal plain, a 40- to 50-mile-wide swath along the Texas Gulf Coast. Typically, elevation rises approximately one foot per mile inland.

Northern and eastern portions of the area are largely forested; southern and western portions are predominantly prairie grassland; coastal areas are prairie and sand.

Surface water in the Houston region consists of lakes, rivers, and an extensive system of bayous and manmade canals that are part of the rainwater runoff management system. Some 25%-30% of Harris County lies within the 100-year flood plain. Elevation ranges (a.s.l.): Brazoria 0'-146', Chambers 0'-85', Fort Bend 12'-158', Galveston 0'-43', Harris 0'-310', Liberty 0'-269', Montgomery 43'-435', Waller 80'-357'.

The climate of Houston is classified as humid subtropical climate, with tropical influences. August normally ranks as the warmest month at 84.6 °F (29.2 °C) and January the coldest month at 53.1 °F (11.7 °C). The normal annual precipitation measures 49.77 inches (1,264 mm).

Type of PPE Needed: Structural-Yes Proximity-No

☐ **Specific physical area of operation:**

City of Houston: Latitude 29.7604° N, 95.3698° W

Houston, the most populous city in the Southern United States, is located along the upper Texas Gulf Coast, approximately 50 miles (80 km) northwest of the Gulf of Mexico at Galveston. The city, which is the ninth-largest in the United States by area, covers 601.7 square miles (1,558 km²), of which 579.4 square miles (1,501 km²), or 96.3%, is land and 22.3 square miles (58 km²), or 3.7%, is water.

Exterior Operations
Interior Operations
Outdoors/ Wildland

Type of PPE Needed: Structural-Yes Proximity-No

Likelihood of or response to CBRN terrorism incident:

Likelihood of or response to a CBRN terrorism incident

The likelihood of a response to a CBRN terrorism incident is LOW due to the LOW frequency/history of CBRN

incidents in the city of Houston.

Three concerns HFD has regarding a CBRN Incident:

1. The increase of Global Terrorism, per the Institute of Economics and Peace.
2. The High Severity of human loss
3. The High Severity of long term environmental impact

To respond and mitigate a CBRN incident, HFD will refer to the Houston Fire Department Guidelines.

- Subject: Hazardous Materials, Volume NO. II , Reference NO. II -15
- Subject: Weapons of Mass Destruction, Volume NO. II , Reference NO. II -41

Type of PPE Needed: Structural-Yes

Proximity-No

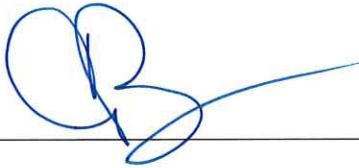
Circle PPE Determined from Assessment

NFPA 1971 Current Edition Structural Compliant PPE Determined

NFPA 1971Current Edition Proximity Compliant PPE Determined

☐ NFPA 1971, have been reviewed before purchase of protective clothing. All protective clothing issued to members of the Houston FD shall be compliant with the minimum standards found in NFPA 1971.

☐ All ensemble elements considered for purchase have been evaluated for comparative strengths and weaknesses. The interface of all ensemble elements and equipment utilized by the department are considered for proper fit and function.



Sam Peña
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Houston Fire Department

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