Hamed Rasouli Sadabad

Dr Hamed Rasouli Sadabad is a postdoctoral research associate in InToxFIRE project in the FireSERT centre at Ulster University.

Hamed is a senior analytical chemist and materials scientist with education in Polymer Engineering (BSc, MSc) and Environmental Sciences (PhD).

A Survey on Limitations of Decontamination Procedures for Firefighters' PPE

Hamed R. Sadabad
Research Associate, Ulster University

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Objectives of this study

Objectives

- Evaluate the effectiveness and limitations of current decontamination procedures for firefighters PPE from their perspective
- Gather insights on limitations and challenges in the implementation of decontamination
- Propose evidence-based recommendations for enhancing or changing decontamination procedures.
- To determine where further research is required and what training materials should be developed.

Scope of the Study

This is the obtained results of an ongoing study as a part of the InToxFIRE project (carried out by Shawn Dobbyn under supervision of Dr. Svetlana Tretsiakova-McNally)

Methodology

Data collection for study

Ethical consideration approved by the CEBE Ethics Committee for Taught Courses (ECTC).

Semi-Structures Interviews

- Insight from experienced firefighters
- Interviewees from different countries
- The semi-structured approach allowed for flexibility in asking follow-up questions
- Three people are interviewed so far.

Questionnaire

- An online survey that could be sent to any active or retired firefighter
- Questions to cover their experience, adherence to decontamination procedures, challenges and recommendations
- The survey was sent to fire stations in the UK, Ireland, Australia and the USA.

A consent question on the first page, asking if the participant consents to participate in the survey with keeping their anonymity.

Methodology

Semi-structured Interview

Interviewee	Region	Years in Fire Service	Roles
A	United Kingdom	14	Private Industrial firefighter, Senior manager
B	Ireland	20	Firefighter, station officer, Assistant Chief Fire Officer
C	USA	11	Volunteer firefighter, Lieutenant, Captain, Assistant Chief Fire Officer

Methodology

Questionnaire

The presented results are the outcome of for 100 firefighter, worldwide.

The data from the questionnaires was used as the primary data with supplementation from the interviews.

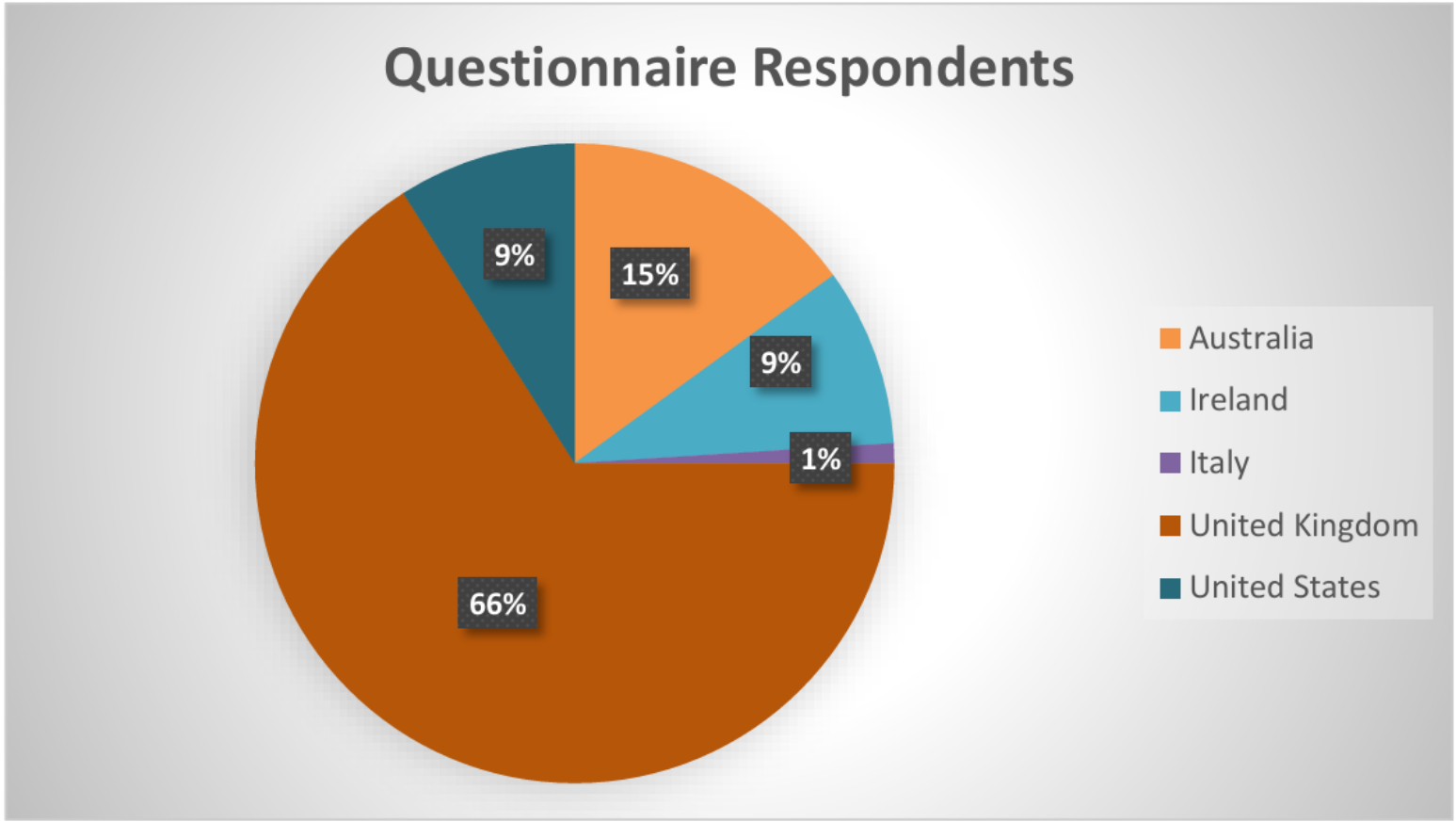


Figure 2: Questionnaire Firefighter Locations *JISC Questionnaire 2025*

Analysing participants background

Results and Discussion

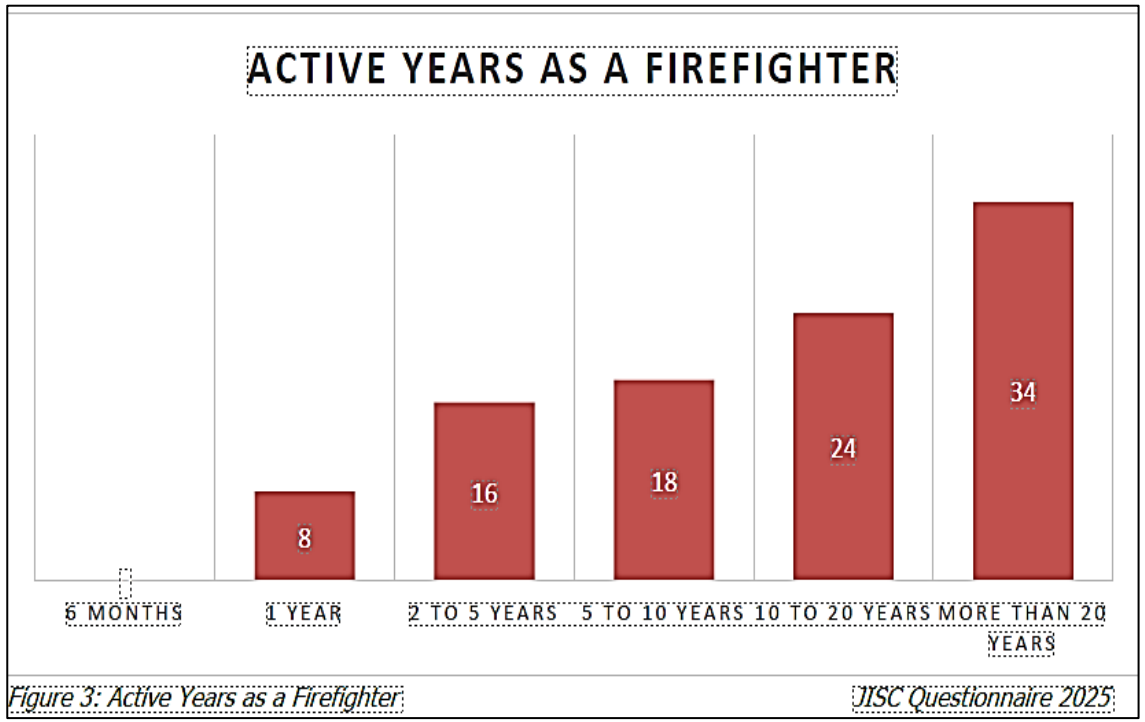


Figure 3: Active Years as a Firefighter *JISC Questionnaire 2025*

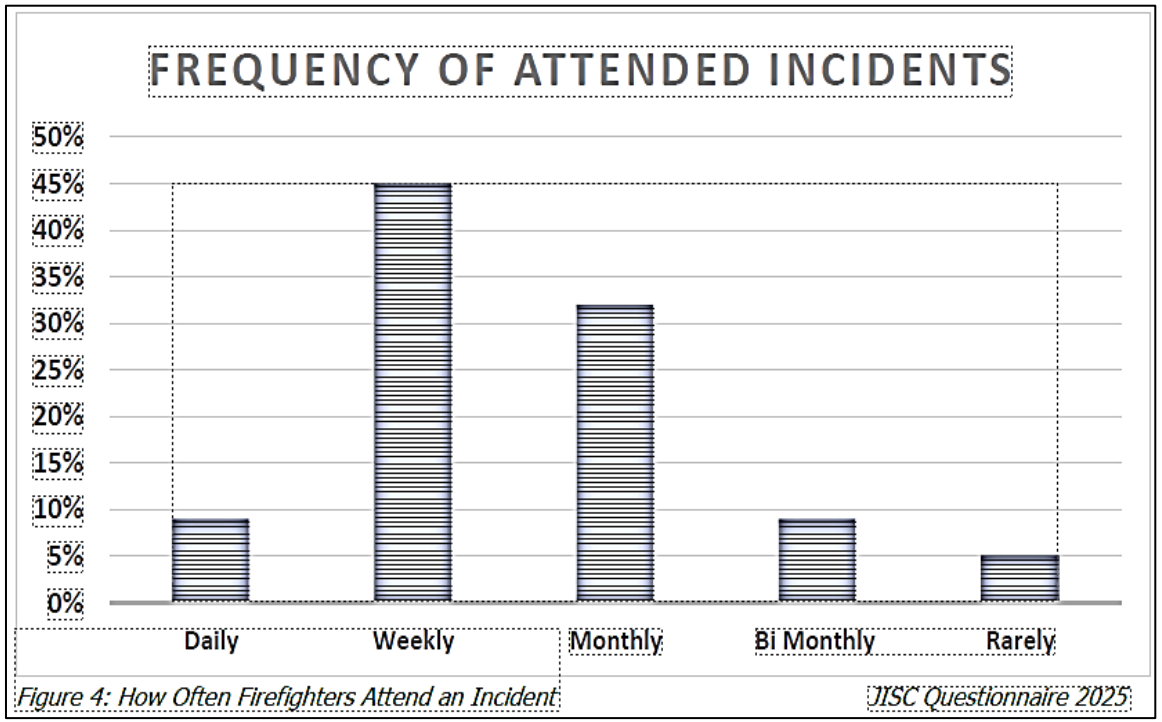


Figure 4: How Often Firefighters Attend an Incident *JISC Questionnaire 2025*

58% of the respondents have been active as firefighter for more than 10 years.

8% and 45% of the respondents attend incidents daily and weekly, respectively.

Results and Discussion

Adhere to PPE decontamination protocols

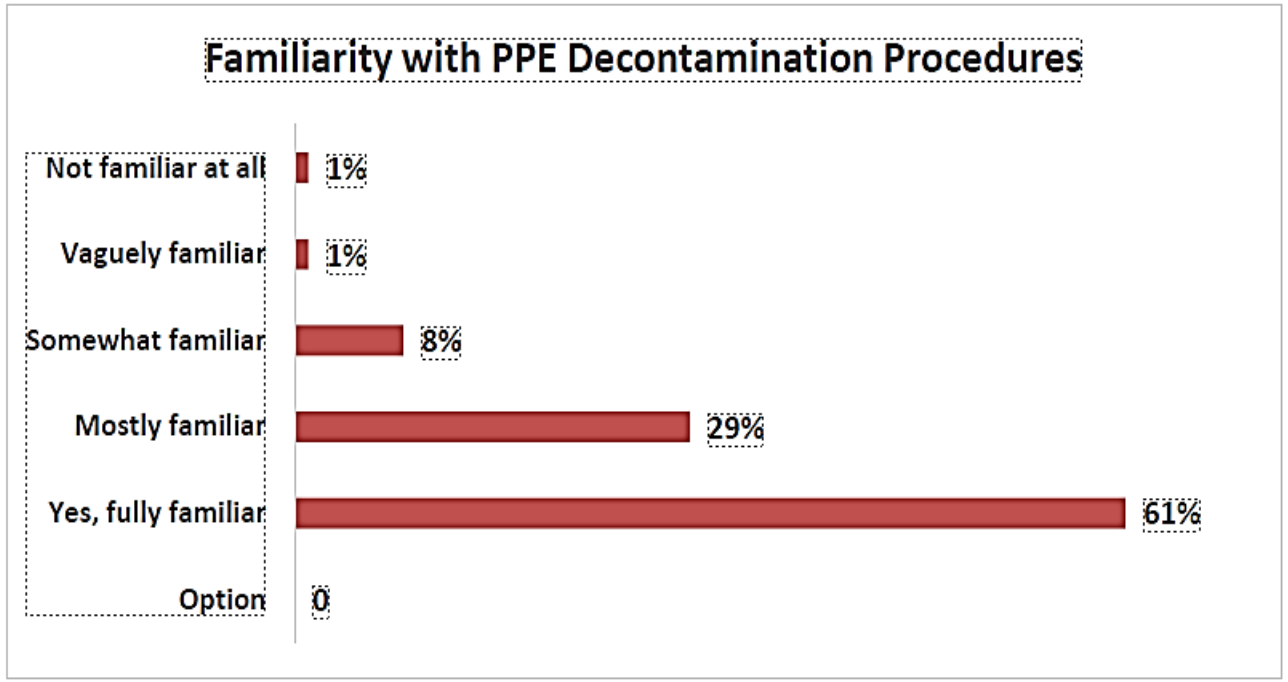
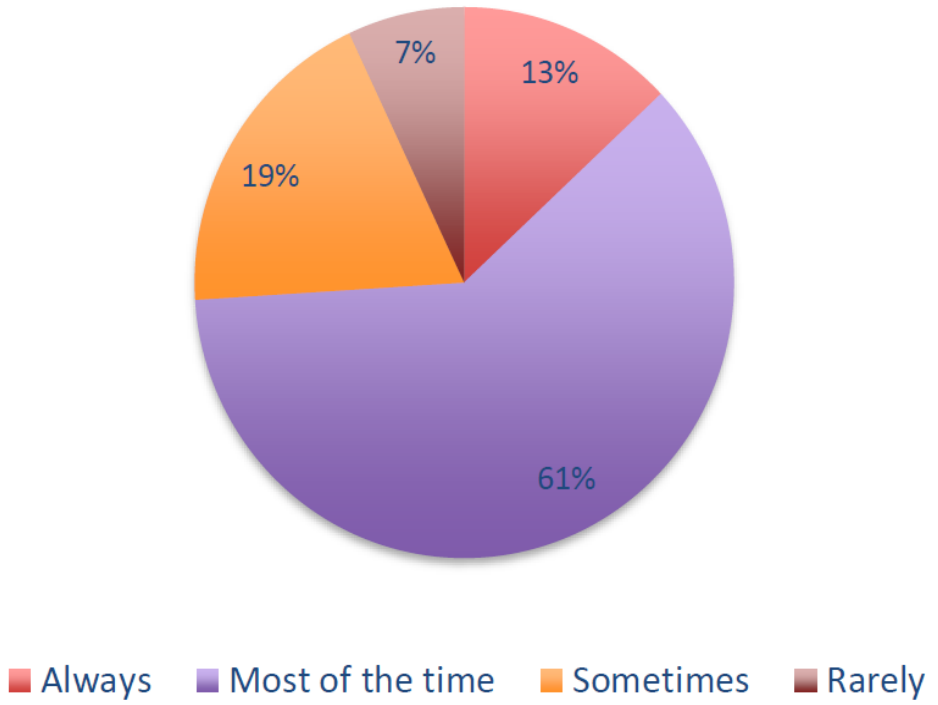


Figure 6: Familiarity with PPE Decontamination Procedures

JISC Questionnaire 2025

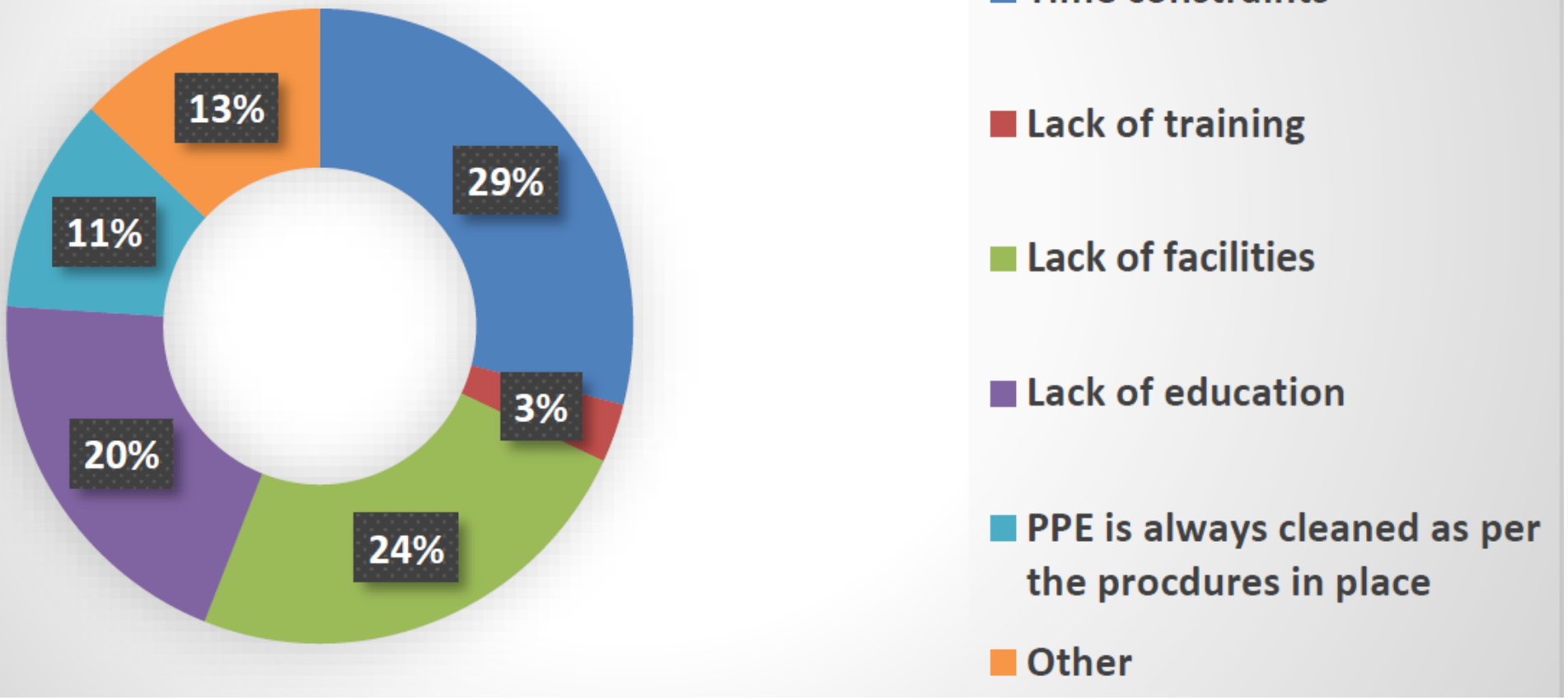


It was found 90% of participants felt fully or mostly familiar with decontamination procedures

Only 13% of respondents ALWAYS follow the PPE decontamination procedures

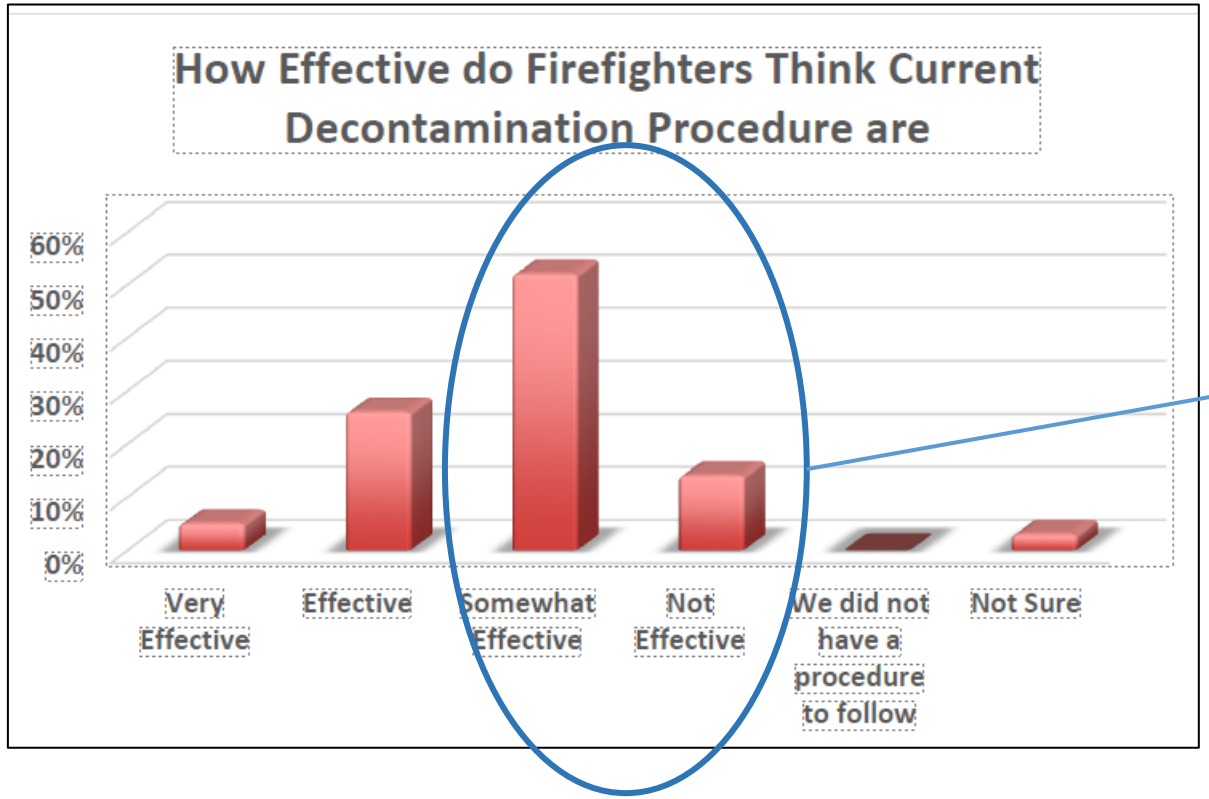
Results and Discussion

Reasons for not following the decontamination procedures



Results and Discussion

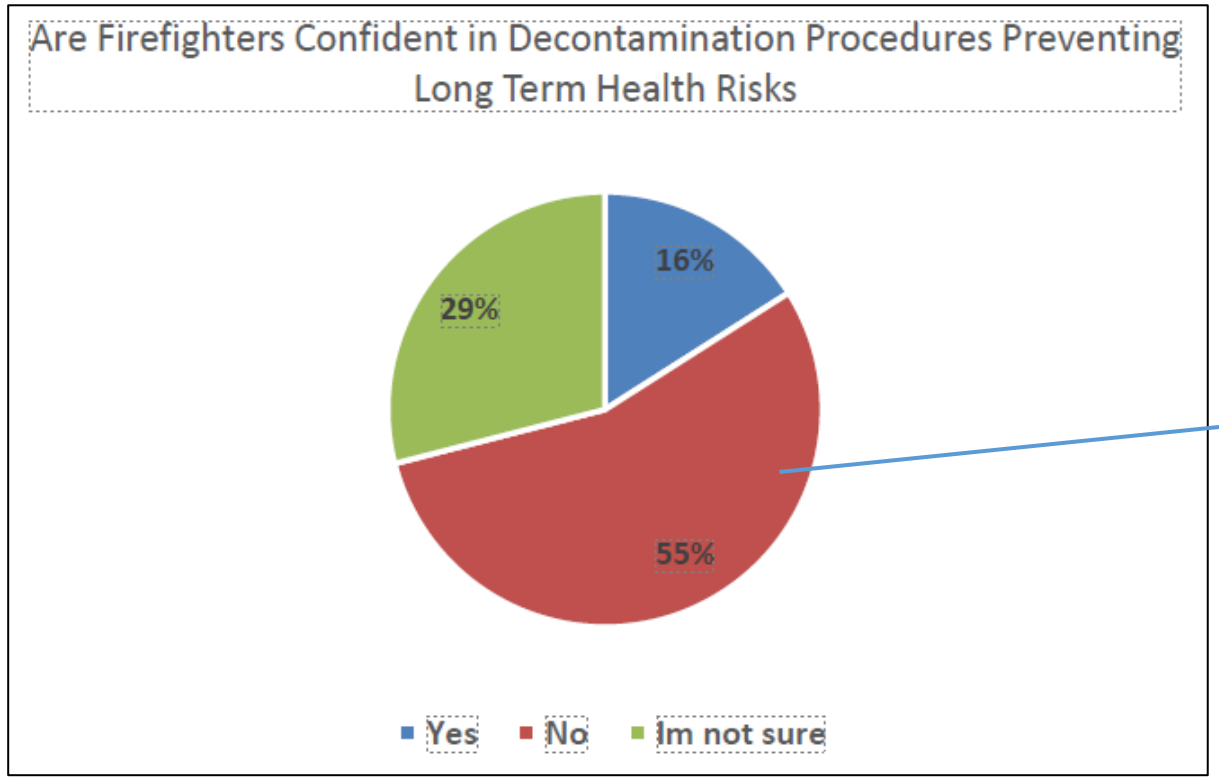
Perceived Decontamination Effectiveness



- 52% felt their decontamination procedures are only ‘somewhat effective’ at removing contaminants.
- With a further 14% claiming that their current procedures are ‘not effective’

Results and Discussion

Perceived Decontamination Effectiveness

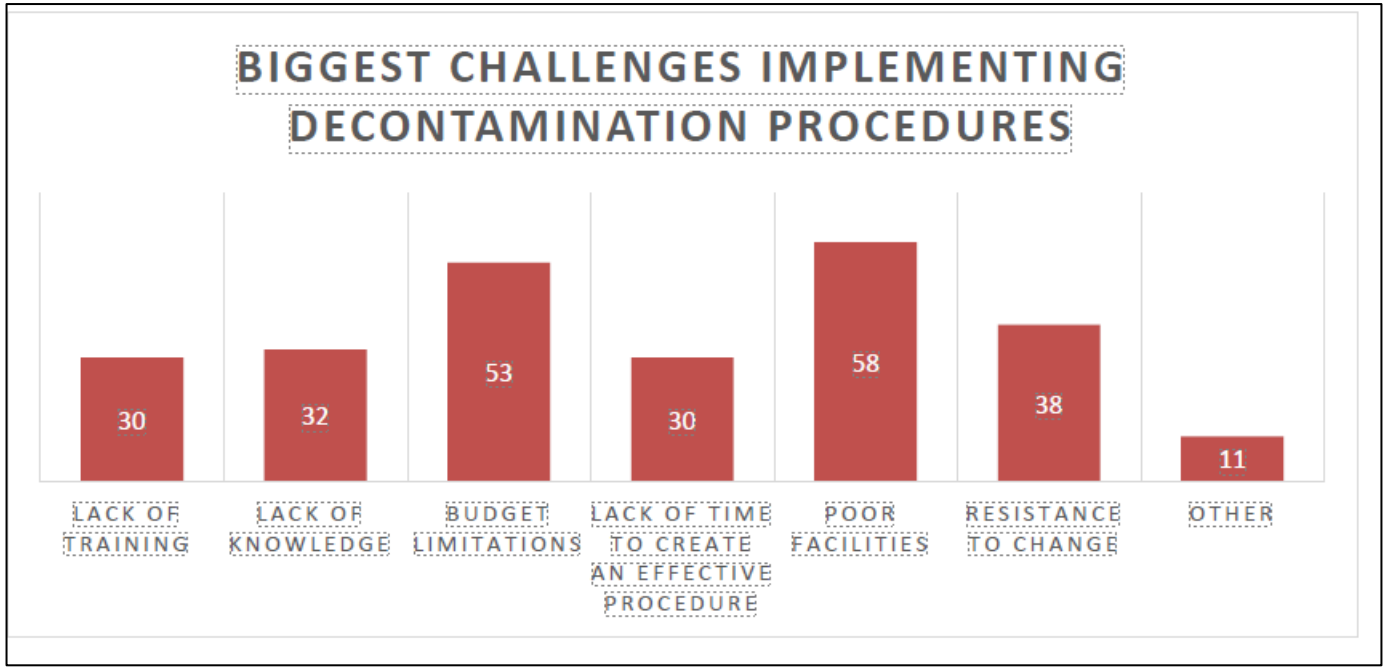


- 55% of respondents **are not confident** whether the current decontamination procedures are able to prevent long term health risks.
- 29% of them stated they are not sure about it.

Results and Discussion

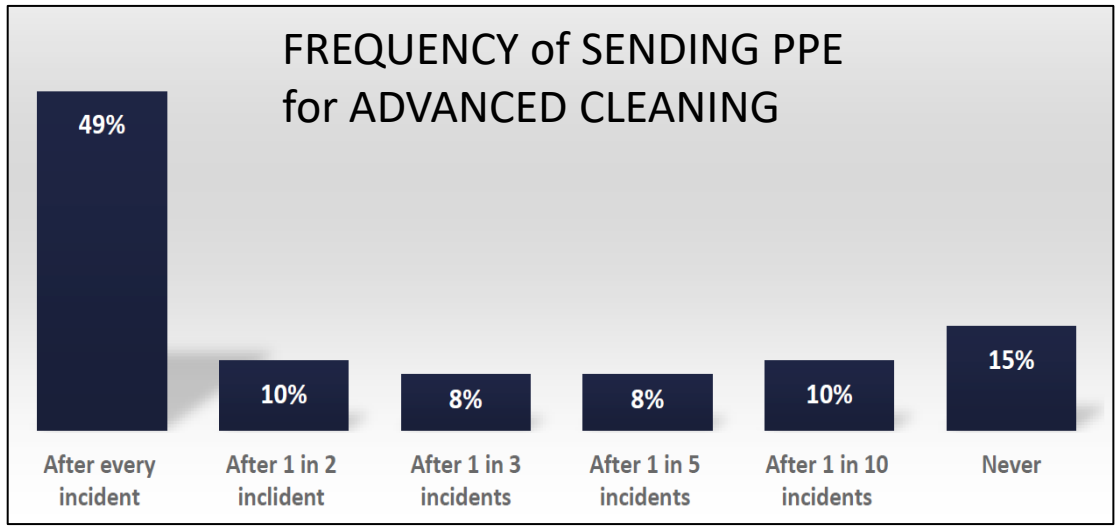
Challenges with implementing PPE Decontamination procedures

"Firemen hate two things. They hate things the way they are, and they hate change" - Interviewee B



Results and Discussion

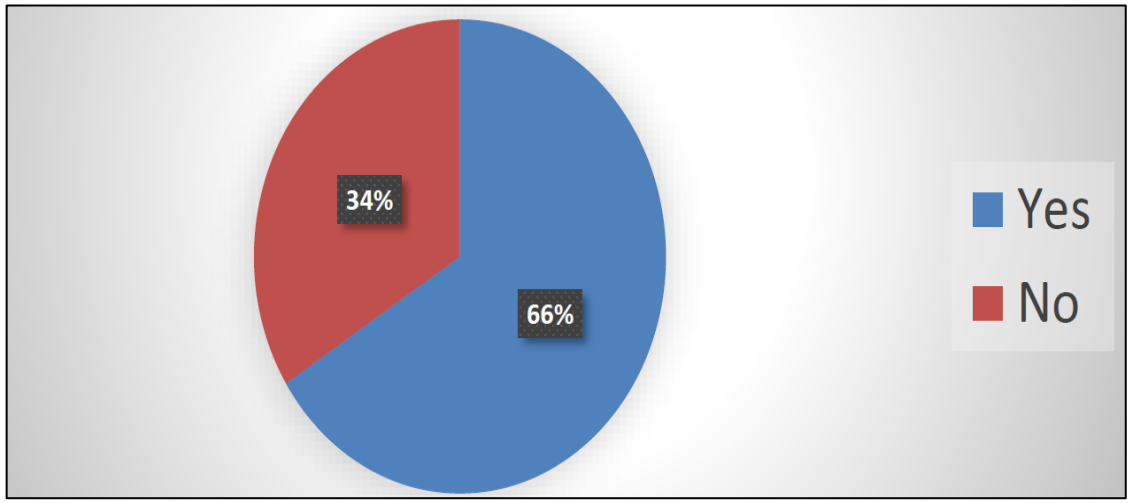
Challenges with implementing PPE Decontamination procedures



- Only 49% of respondents sent contaminated PPE for advanced cleaning after each incident.
- 15% of respondents NEVER sent their PPE for advanced decontamination

Firefighters who stay in their PPE for more than four hours after a fire incident, were found to be twice as likely to develop cancer than those who immediately remove PPE. (Wolffe et al., 2023)

- 66% of respondents had to put on/re-use the contaminated gear



Firefighter Recommendations for Improvement

- Improved station cleaning facilities especially for BA
- Having dedicated decontamination areas, showers, storage facilities.

"BA sets are difficult to clean because there's lots of parts to them. They're not easy to clean because they're funny shapes with lots of corners and hidden crevices and things like that"- Interviewee A

- Spare PPE and equipment
- Faster return times for laundered gear.
- Spare gear can be expensive.

Many firefighters mentioned they felt reluctant to send PPE for cleaning due to long cleaning times and lack of spare gear.

- Education and Training
- Stricter enforcement of decontamination procedures

Education on the benefits of PPE decontamination and the detrimental effects of contaminant exposure.

- Health Monitoring

Preventative health screening and looking for the most common types of cancers found in firefighters

Future Works

- The study is ongoing, questionnaire is open and interviews are in progress.
- Integrating the results of this study with other parts of the project.
- Comparison of the gained results with other reports and research in the literature.

Thanks for your attention