



# Wildfires

How to stop them

Presented by David, Aaron, and Taylor

# The Facts

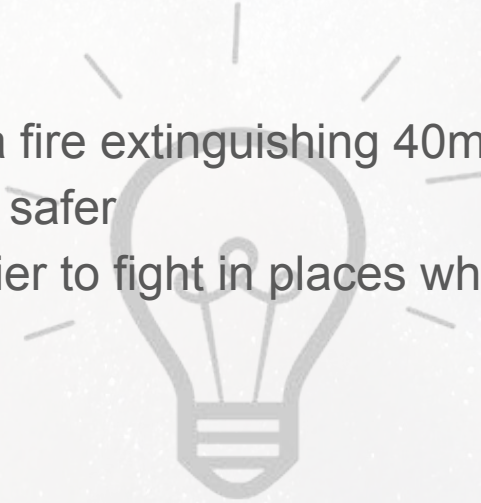
- All Wildfires are Class A
- Generally caused by humans
- Can spread extremely fast
- Wildfires require heat, oxygen, and fuel
- The speed of the fire is based on the fuel it burns on

# Current limitations

- Current solutions have significant risk to human life
- Wildfires can be in places where it is hard to get equipment to
- Due to climate change, wildfires have been happening more frequently
  - With more intensity
- Using too much water to fight fires causes erosion

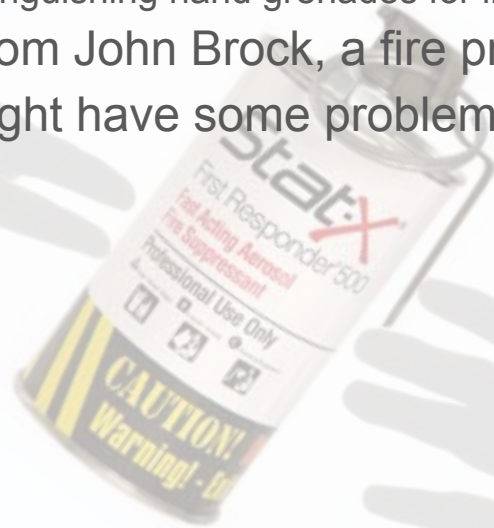
# Our solution

- Our solution is to create a fire extinguishing 40mm grenade
- This will make firefighting safer
- It will also make fires easier to fight in places where it is difficult to get equipment to



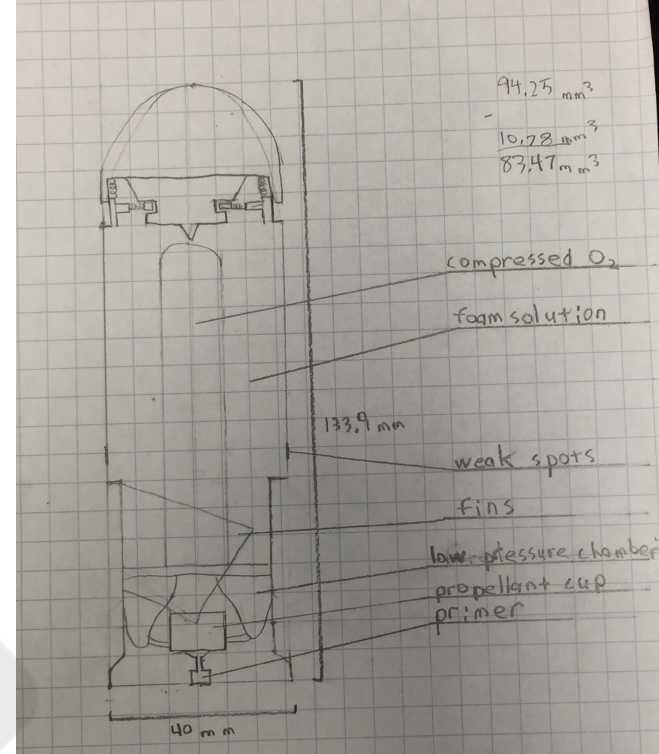
# Our mentor

- We chose to ask the Stat-X company for advice
  - Stat-X makes fire extinguishing hand grenades for indoor use
- We got a response from John Brock, a fire protection engineer
- He told us that we might have some problems producing enough foam to be truly effective



# Details

- Made to be launched from 40mm launchers
- Uses a CAFS
- Compressed air used to aerate foam
  - Also launches foam from projectile
- Triggers on impact
- Uses spin to arm
- Launch from M79 launcher
- Estimated cost to produce: \$5-7.00 per round

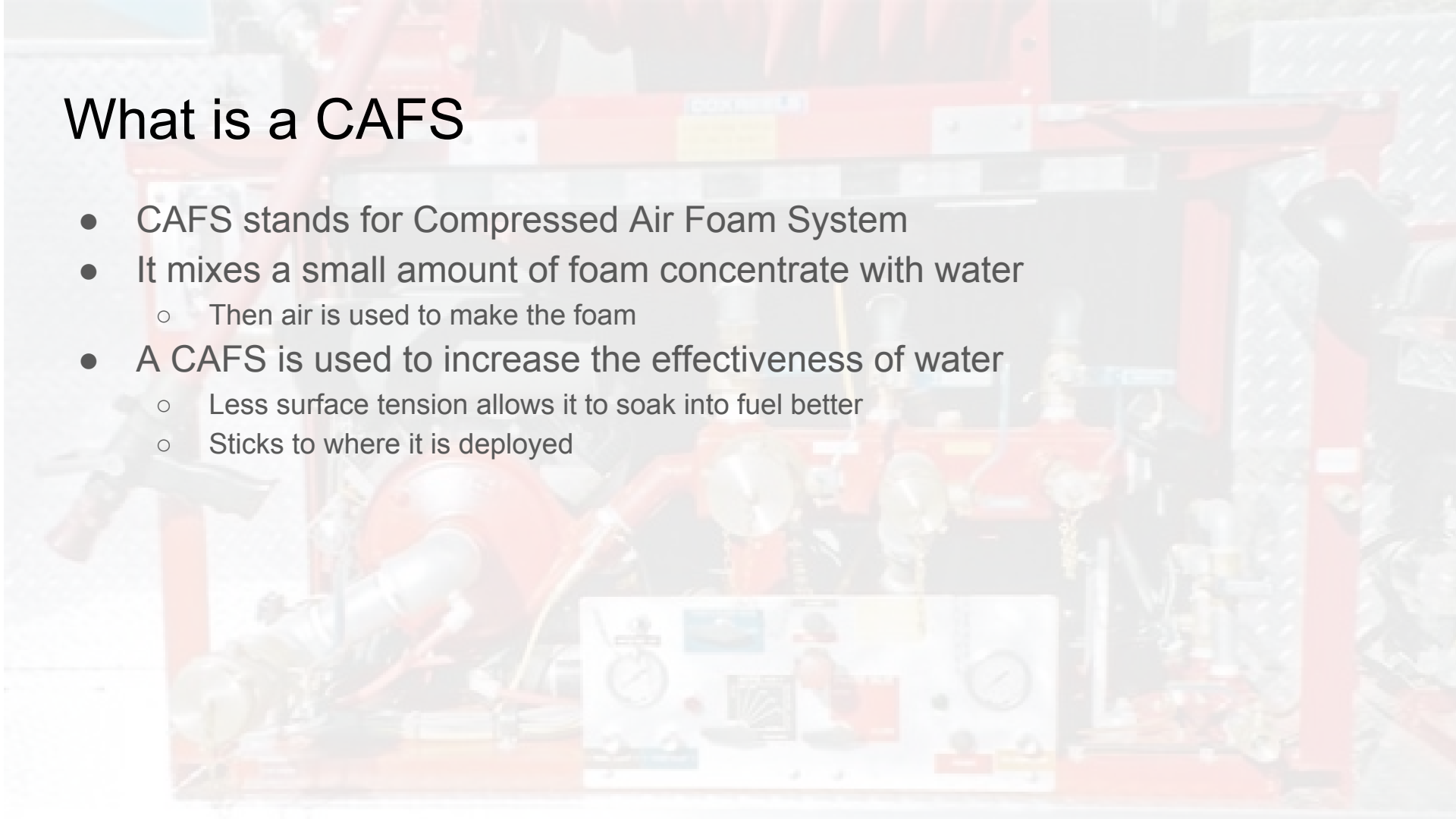


# How it works

1. Grenade is launched
  - 1.1. Rifling in barrel causes it to spin
2. Centrifugal force from spin causes pins to be withdrawn
  - 2.1. Grenade can now be triggered on impact
3. On impact, head is pushed in
  - 3.1. Spike on inside of head punctures O<sub>2</sub> capsule
4. O<sub>2</sub> is released into main chamber
  - 4.1. O<sub>2</sub> mixes with foam solution to make foam
5. Main chamber is full of foam, and under more pressure
  - 5.1. Small sections of walls that were purposefully made weaker rupture under pressure
  - 5.2. Foam is expelled out of new holes into surrounding area

# What is a CAFS

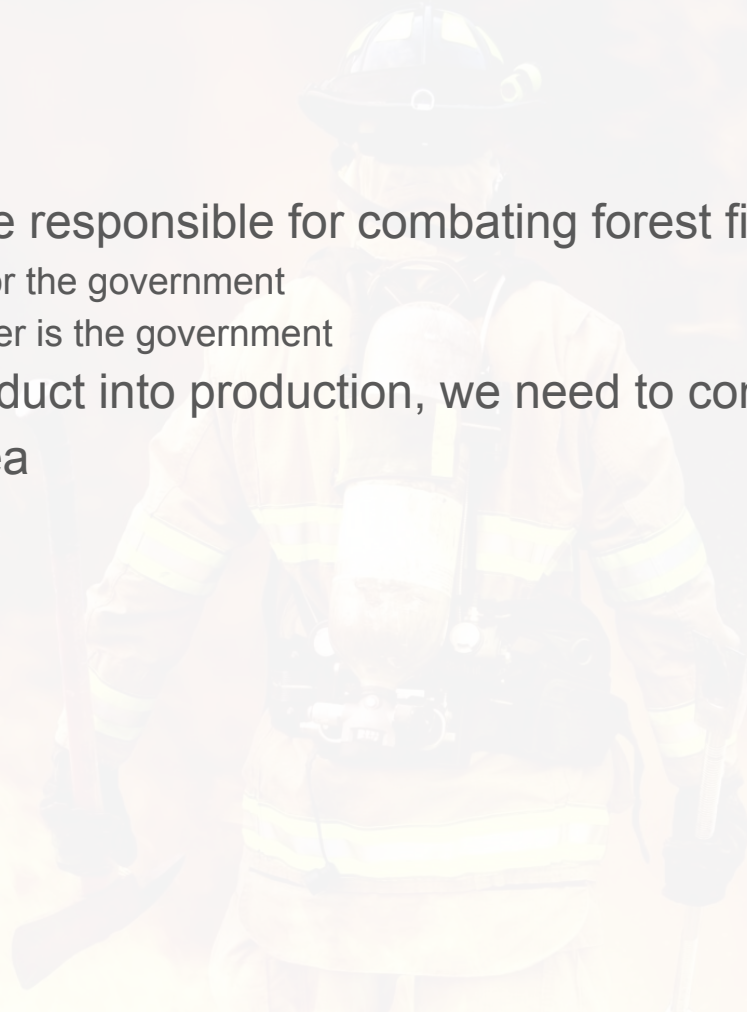
- CAFS stands for Compressed Air Foam System
- It mixes a small amount of foam concentrate with water
  - Then air is used to make the foam
- A CAFS is used to increase the effectiveness of water
  - Less surface tension allows it to soak into fuel better
  - Sticks to where it is deployed





# Consumer

- Firefighters are responsible for combating forest fires
  - They work for the government
  - Our consumer is the government
- To get our product into production, we need to convince the government that it is a good idea



# Pros and Cons



- **Pros:**

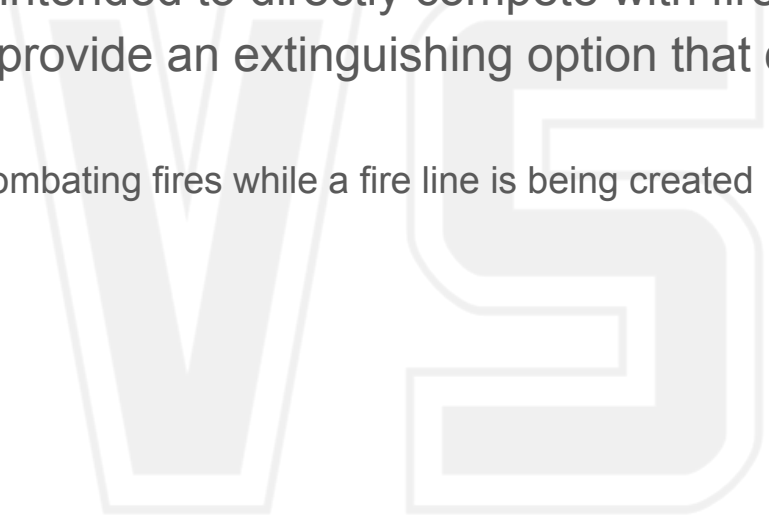
- Portable
- Uses already established equipment
- Lightweight
- Less risk to life than other methods
- Bio-friendly (mostly)

- **Cons:**

- Won't be able to keep up with big fires
- Limited extinguishing power
- Requires a good aim to be effective (firefighters may already be trained for this)

# Competition

- Our product is not intended to directly compete with fire trucks
- The intention is to provide an extinguishing option that can go where fire trucks can't go
  - Also to assist in combating fires while a fire line is being created



# Effects on the environment

A conceptual image featuring a transparent globe of the Earth with a grid of latitude and longitude lines. The globe is positioned centrally and appears to be resting on a thick, vibrant bed of green moss. The background is a soft-focus forest scene with various green plants and trees, creating a natural and serene atmosphere. The overall lighting is bright and airy, suggesting a healthy, thriving environment.

- Stopping wildfires in a more efficient manner will save more plant life
  - The plant life will help the environment
- Spent shells of grenades could be a hazard to local fauna
  - Cleanup efforts may be necessary

A white, stylized character with a wide, toothy grin and a single horn, set against a white background. The character has a large, open mouth showing a full set of white teeth with a metal wire and brackets, resembling braces. The character's eyes are closed in a happy expression, and it has a single, curved horn on its head. The overall appearance is that of a friendly, cartoonish creature.

The End