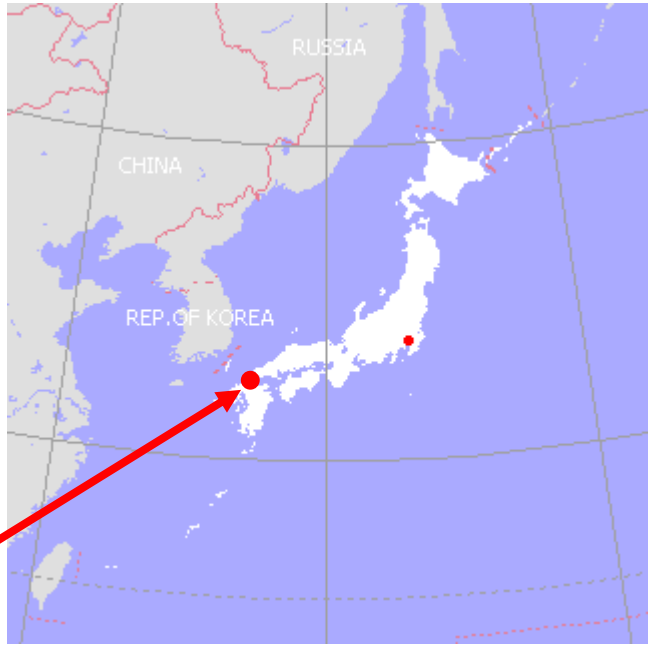
Features and effectiveness of Eco-friendly Soap-based Class A Foam For forest fire and peat fire control

Shabondama Soap Co., Ltd.

Company introduction

Corporate Vision：Protect healthy body and clean water

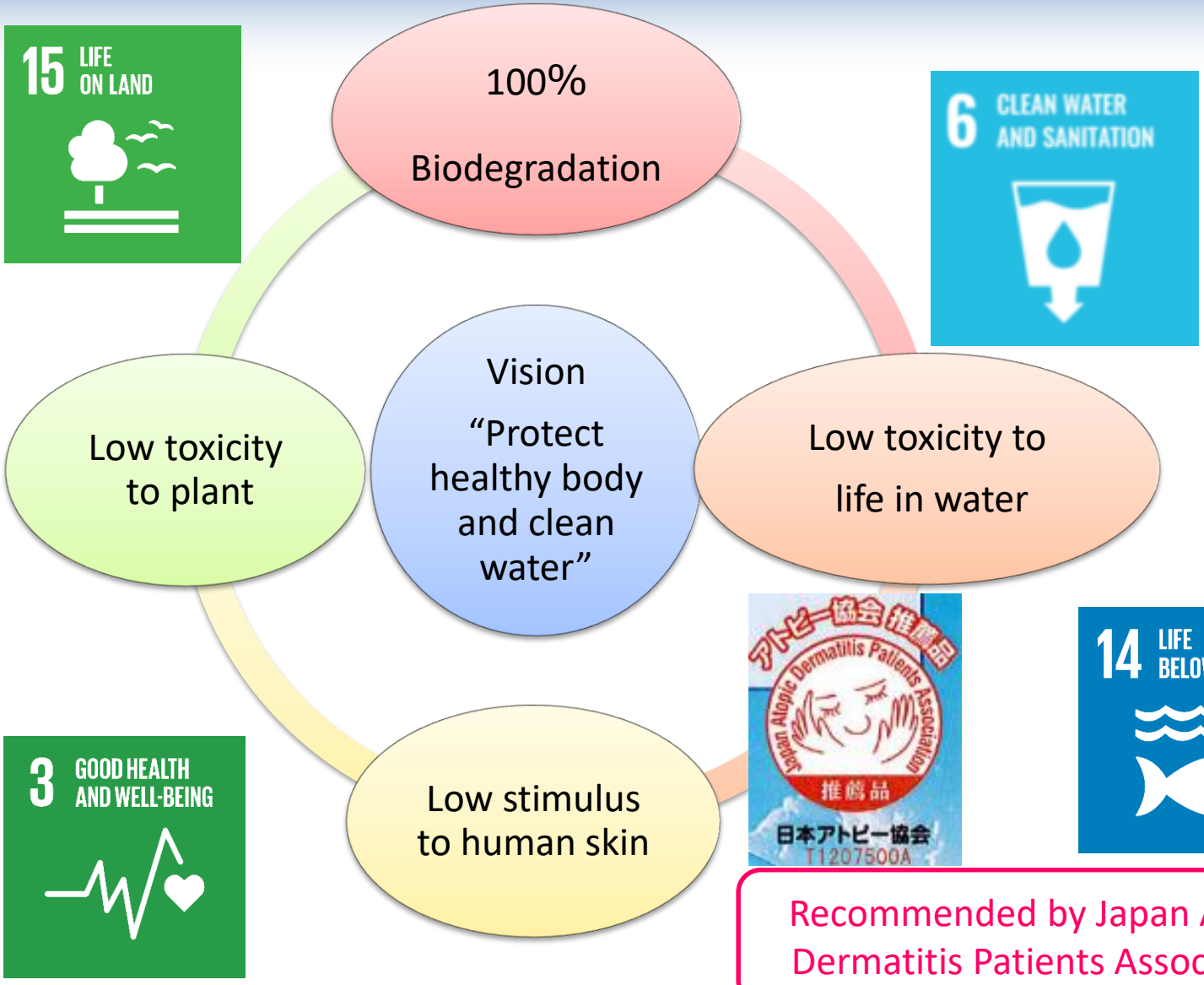


Head office: Wakamatsu-ku, Kitakyushu city, Fukuoka Prefecture
Establishment: 1910
Sales: 8,7 billion yen
Capital: 100million yen
Employee: 147 staffs (including Person with disability: 1, Aged: 4)
(Average age: 34,　Male : Female ratio　4：6)

Company introduction

<Manufacturing Products>
Additive-free soap
Shampoo, conditioner
Toothpaste
Bleach・baking soda
Fire fighting agent

About soap



Recommended by Japan Atopic Dermatitis Patients Association

Products based on the vision "Protect healthy body and clean water" contributes to the goal 3 (Health), 14 (Ocean), 15 (Land)

Background for Development of Soap-based Fire-fighting Foam

1995 The Great Hanshin-Awaji Earthquake

1999 Use of chemical firefighting foam by Kitakyushu City
Followed by Tokyo Fire Department

2001 Development of a new fire fighting foam based on soap
Kitakyushu Fire Department, Shabondama Soap, Furukawa Techno Material

2003 Initiative by Fire and Disaster Management Agency to promote science and technology for fire prevention
Participation of University of Kitakyushu

2005 Development of a new fire fighting vehicle for a new fire fighting foam
Participation of Morita Corp.

2007 Sales of “Miracle Foam”, “Miracle CAFS”

Soap-based ClassA Foam

High firefighting effect

Wettability, Penetrability

Fast defoaming

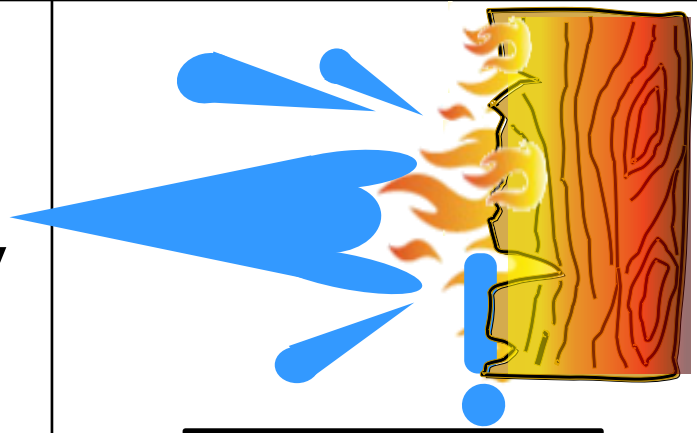
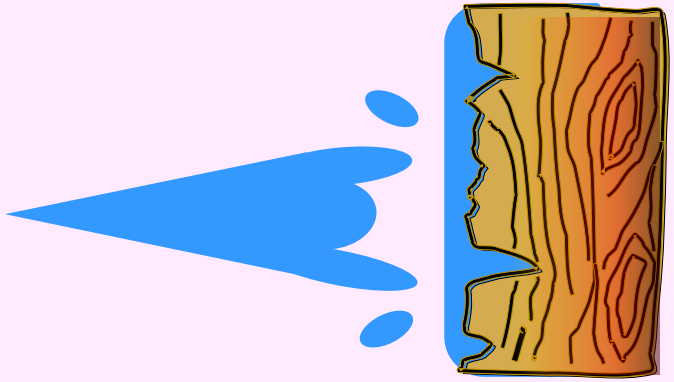
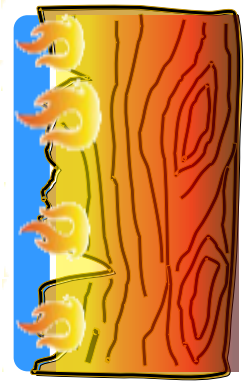
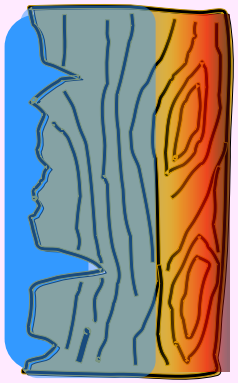
Bubbles disappear immediately

Eco-friendly

Low toxicity, 100% Biodegradation

Soap-based ClassA Foam is specifically for fresh water and the concentration for use is 1%.

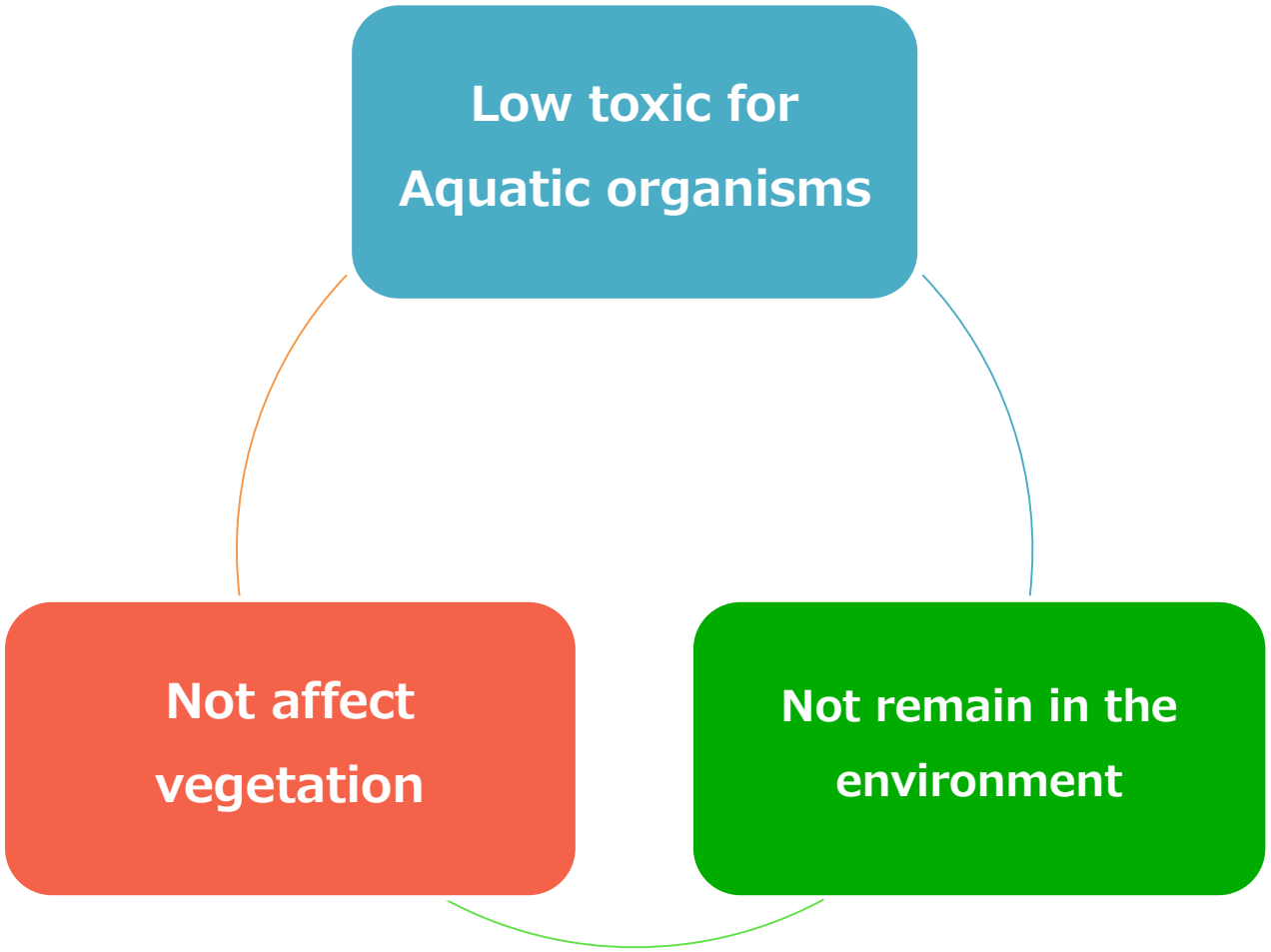
Why is foam that a fire extinguishing effect is high?

	Water	Firefighting agent
Wettability	 Hard to get wet	 Easy to get wet
Penetrability	 Hard to penetrate	 Easy to penetrate

Fast defoaming

SOAP + Ca^{2+} → soap scum (metallic soap)

Eco-friendly



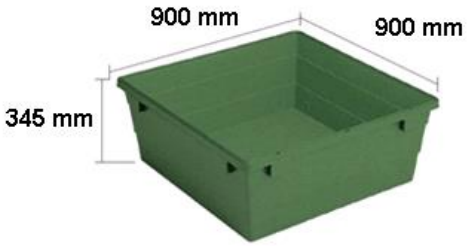
Low toxic for Aquatic organisms

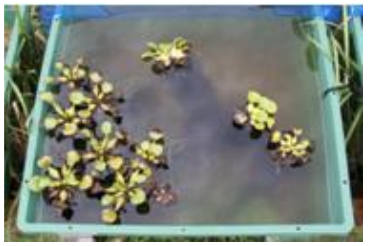
Toxicities(LC_{50}) of Firefighting Foams in Oryzias latipes

Brackish water	at 12 hours (ppm)	at 24 hours (ppm)	at 48 hours (ppm)
Soap based firefighting foam	4000	1330	650
Commercial product A	15	7.5	7.5
Commercial product B	65	55	20
Commercial product C	65	20	20
Commercial product D	185	133	73

Low toxic for Aquatic organisms

Model biotope test

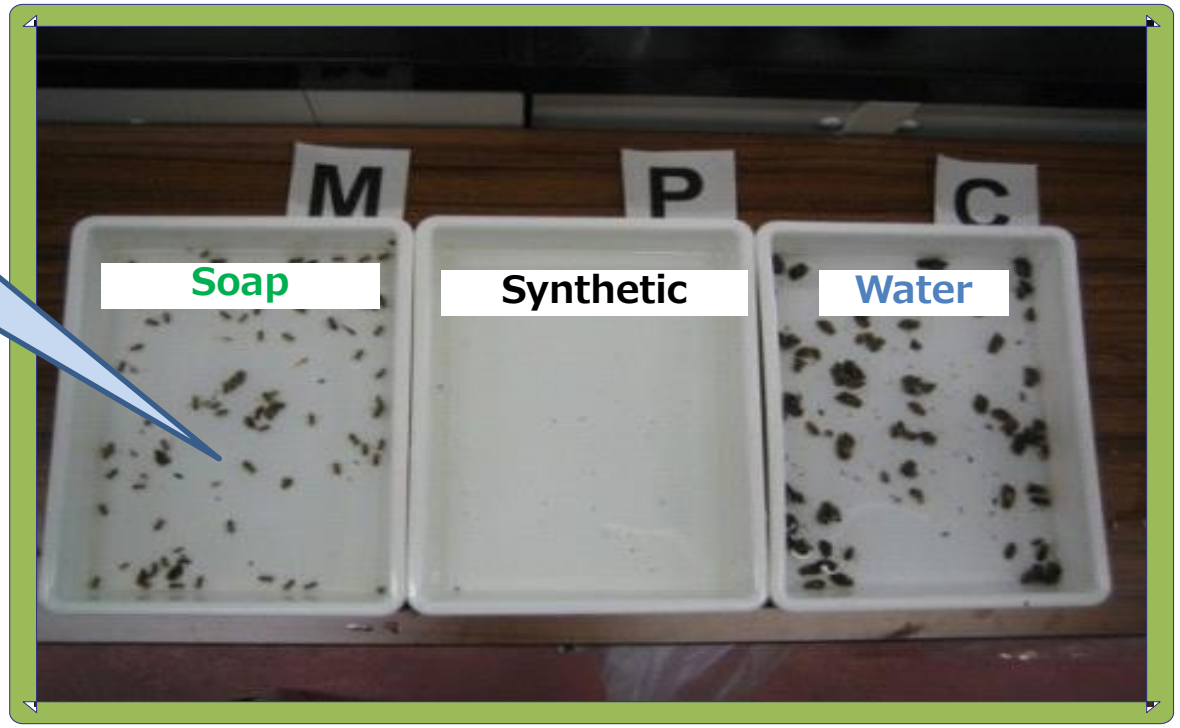




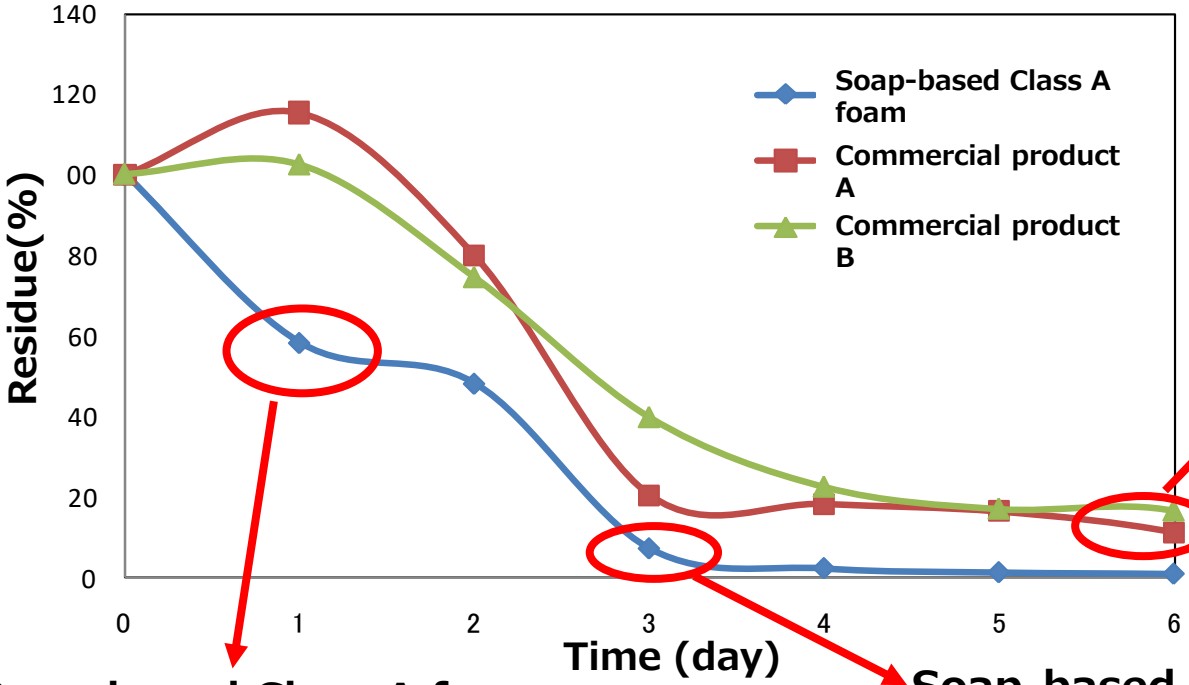
Before

Spraying

7 months later



Not remain in the environment



Concentration : 1000 [mgCOD/L]
Temperature : 25℃
Phosphate buffer (pH=7.2)
500 ppm

The commercial products:
About 20% was remain

Soap-based Class A foam :
About 40% was degraded

Soap-based Class A foam :
About 90% was degraded

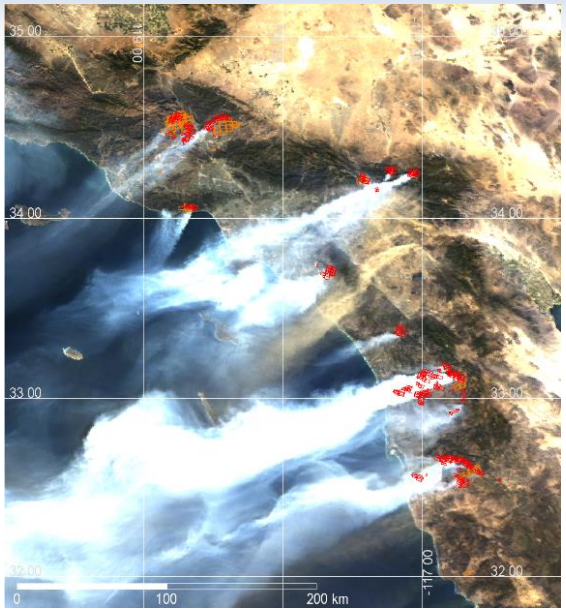
Low impact on the ecosystem

Test Laboratory:Research and Development Center of Fire and Environmental Safety, The University of Kitakyusyu

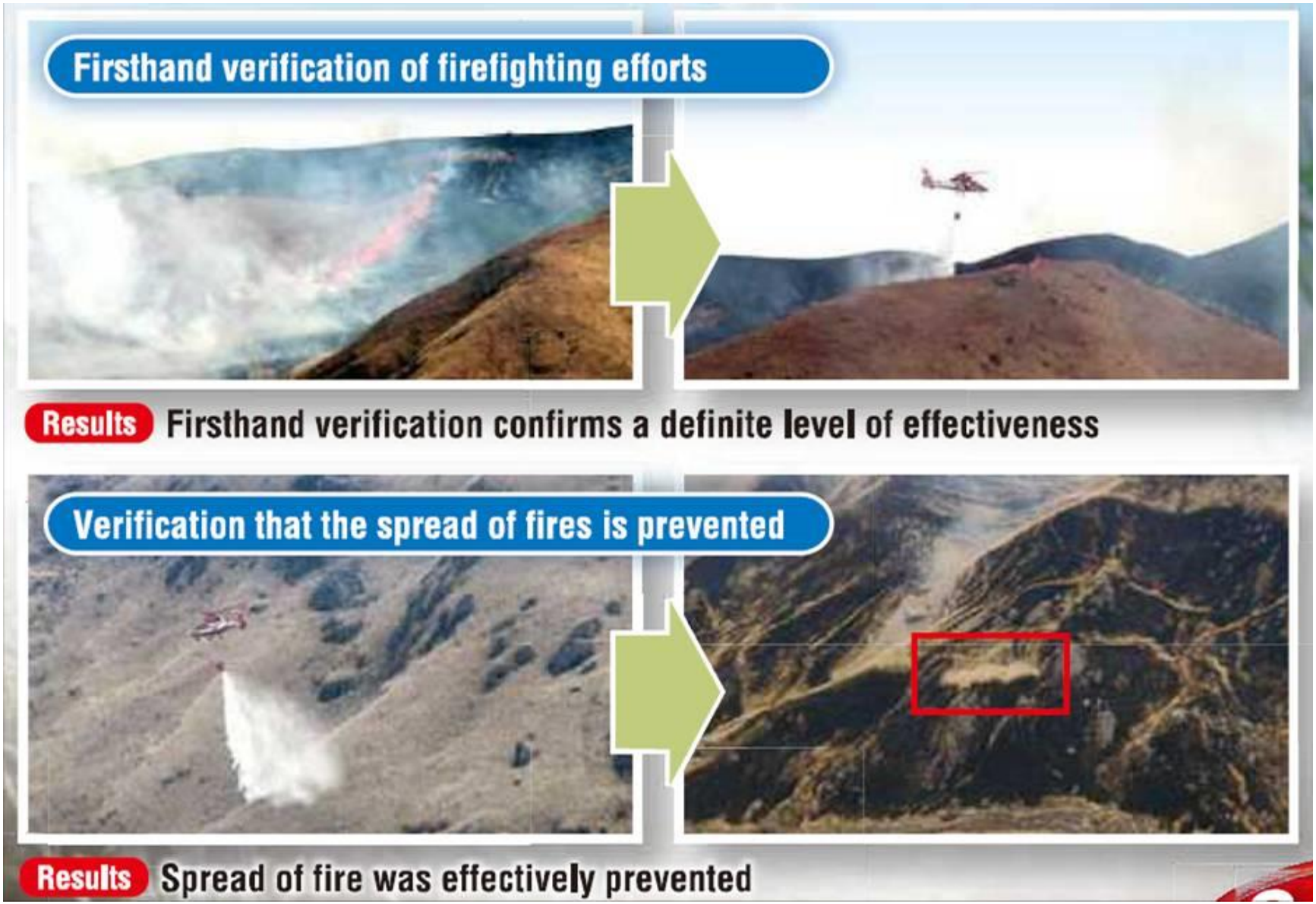
Not affect vegetation

	Soap-based	Water
Before		
After		
10 months later		

Wild fire



For wildfire



Presentaiton and exhibition

Thank you for your attention.