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Aircraft Incidents and Hazards related for rescue personnel



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What about you!
Are you aware that you are taking chances?





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Awareness

about crash site hazards

not only a question for ARFF personnel!

IT'S A QUESTION FOR ALL INVOLVED AGENCIES AT AN CRASH SITE OR ANY OTHER ACCIDENT/FIRE!

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Crash Site Hazards

- Chemical
- Biological
- Psychological
- Physical

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Crash Site Hazards

- Chemical **Example** →
- Biological
- Psychological
- Physical

Post burn metal oxides
 Burned electrical insulation
 Oxygen
 Oil, grease and fuels
 Hydraulic fluids
 Battery fluids
 Radioactive material

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Crash Site Hazards

- Chemical
- **Biological** **Example** →
- Psychological
- Physical

HIV virus (AIDS)
 Hepatitis
 Tetanus
 Typhoid
 Polio
 Meningitis

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Crash Site Hazards

- Chemical
- Biological
- **Psychological** **Example** →
- Physical

Triggered by:

- Smell
- Taste
- Touch
- Sight
- Sound
- Memory

Fear
 Confusion
 Conflict
 Traumatic stress
 Fatigue
 Depression
 Nervous exhaustion

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Crash Site Hazards

- Chemical
- Biological
- Psychological
- Physical **Example** →

- Sharp jagged wreckage
- Fatigue
- Weather
- Underfoot hazards
- Overhead hazards
- Composite material

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More example of aviation hazards

- Asbestos
- Batteries
- Cargo (DG)
- Cooling agent
- Electric isolation
- Fuel
- Grease
- High pressure systems
- Hydraulic liquids
- Metal oxide
- Oil
- Oxygen
- Radioactivity
- Rubber
- Plastic
- Wiper flushing fluid
- Waste
- Wheel and brake parts

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Bio hazards – main threats

- HIV virus (AIDS)
- Hepatitis

HIV-AIDS: Up to 75 casualties Possibility of HIV virus Over 75 casualties Probability of HIV virus	Hepatitis: Up to 31 fatalities Possibility of hep virus Over 31 fatalities Probability of hep virus
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AIDS

- Normally transmitted by sexual contact or by intravenous injection
- No known cure
- Virus is fragile and unlikely to survive for long
- Risk is comparatively low

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Hepatitis

- Attacks those who are immunocompromised
- There are three types: A, B and C
- Know and avoid risk factors
- Some of them can be fatal

Hepatitis A:

- stems from poor sanitation.
- transmitted "hand to mouth".
- incubates for 2-6 weeks.
- causes nausea, vomiting, malaise and jaundice.
- clears in 1-2 months.
- vaccination available

Hepatitis B:

- can cause death - or victim may survive as a "carrier".
- transmitted by intravenous injection.
- symptoms similar to hep "a".
- incubation 6-24 weeks.
- effective vaccine available

Hepatitis C to G:

- comparatively recent
- gradually being identified
- similar to hepatitis "B"
- no effective vaccine yet

viruses, all of serious risk on debris

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Minor threats

- Food poisoning
- Tuberculosis
- Tetanus
- Typhoid
- Yellow fever
- Polio
- Meningitis

Immisation/vaccination

Tuberculosis	3 year test
Tetanus	5 - 10 years
Typhoid	3 years
Yellow fever	10 years
Polio	10 years
Meningitis	5 years

Personal protection

Assess risk

Ensure immisations and vaccinations are up to date

No eating/drinking on site

Maintain good hygiene

Adopt dirty area/clean area procedures and disciplines

Use disposable impermeable suits with hoods

Use latex glove inners

Wear face mask if there is a risk of blood/fluids on face

Consider use of disposable overshoes

No open wounds on site

Treat and cover all scratches and abrasions

Wash immediately if blood or fluid reaches the skin

Summary bio hazards

- Understand bio hazards and protection is not difficult
- HIV (AIDS) is a very small risk and easy to guard against
- Hepatitis is a significant risk but protection is available

Let us focus on composite materials

- Facts
- Benefits
- Hazards
- Checklist




Facts

Modern Composite materials also known as MMMF (Man Made Mineral Fibre) are products made of at least two raw materials, a binding synthetically resin and a reinforcing fibre material. The components keep their individual properties even after they have been combined to form the composite.


Reinforced concrete is an example of an old but still very important composite. The concrete material as such can stand a heavy pressure force but its ability to stand tensile forces is very limited. These forces must and can be taken up by a steel reinforcement reinforcement.

When you combine the the TWO different materials (a binder and a reinforcement) you will get ONE product and it can handle as well pressure as tensile forces.


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Facts


- Glass fibre
- Carbon fibre
- Aramid fibre
- Boron fibre
- Epoxy resin


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Facts

- Aircrafts
- Buses
- Cars
- Train
- Home
- Sport equipment

= Everywhere
 = at all crash sites until the
 opposite are proved!
 Be aware!


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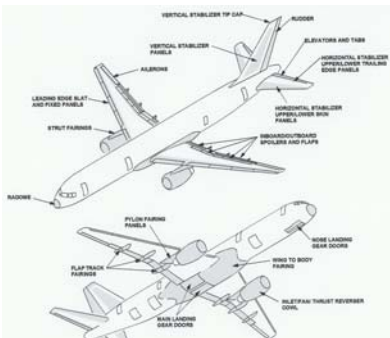
Facts

- Conduct electricity
- Can damage electronic equipment and installation
- If in fire, the structural strength will decrease – a underfoot/overhead hazard

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Facts

Generally
Do not forget the cargo in the cargo hold!



The diagram shows two views of an aircraft: a top-down view and a side view. Labels include: VERTICAL STABILIZER TIP CAP, RUDDER, ALLEVATORS AND TABS, HORIZONTAL STABILIZER CENTER LINE TRACKING EDGE PANEL, HORIZONTAL STABILIZER OPERATIONAL SKIN PANEL, BRACKET/STABILIZER SPOLERS AND FLAPS, WING TO BODY PANEL, INLET/FAN THROAT REVERSER CONE, MAIN LANDING GEAR DOORS, FLAP TRACK FURROWS, Pylon FAPPING PANEL, LEADING EDGE BLADE AND PIVOT PANEL, STRUT FAPPING, MAIN LANDING GEAR DOORS, and RADOME.

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Benefits

- High strength
- Low weight
- Less fuel consumption
- Do not rust
- Easy maintenance
- Inexpensive

Therefore  **ATTRACTIVE FOR AIRLINE INDUSTRY!**

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Hazards

- Small, light and sharp fibre, easily become airborne
- Carry other toxic substances from smoke/fire
- Inhaling
- Penetrating
- Do not rust, the danger will remain until removed

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What's the really big hazard?

- Ignorance
- Apathy
- Poor, confused management
- "Ostrich behaviour"

You have probably to do something – why not start today! –
tomorrow can be to late!

Build awareness and experience

DO NOT BE A VICTIM

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Countermeasure

- Hazard awareness
- Hazard information
- Appropriate protective clothing
- Training
- Preparation
- Documentation

- Minimise the spread of fibre. "Damp down" with AFFF, initially
- A longer term solution, water based gel or clear furniture wax
- Appropriate protective clothing, today's equipment for FF is enough (SCBA is a must)
- No helicopter movements!

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Checklist

- Will fire fighters be necessary at the crash site after the initial ARFF phases are over?
- What level of protective clothing, including SCBA and P3 level masks, will the personnel need, initial and later?
- Logistics, if possible only one way in/out. At least 10 metres from burned or broken composite. SCBA
- What part of the wreckage may contain composite?
- A minimum number of persons at the crash site

Checklist

- Strict control of the "inner" crash site
- Reduce risk for spread of fibre, no movements above
- Damp down with water mist, AFFF, gel or wax
- Decontaminate all that have been exposed, do not forget equipment
- Need for evacuation from buildings near the site?
- Need for moving other aircrafts near the site?
- Need for sealing air intake buildings, terminals etc near the site

Do not let this happen!




Conclusion

- The hazards are there today
- Normally nothing happens but prepare like it would happen
- Be sure you have knowledge, understanding, documents and procedures
- Be sure you have protection enough
- Train, go further with your exercises
- Inform your "neighbours"

BY THE WAY, STOP SMOKING! YOU DESTROY YOUR NORMAL PROTECTION, YOUR CILIA

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Thank you!



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- UK, Post Crash Management System
- UK, Dear Chiefs Officers Letter (10/1991)
- DOT/FAA AR-98/34
- LFV Group Swedish Airports and Air Navigation Services (Swedish CAA) report about crash site hazards (www.lfv.se - report in Swedish only)
