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# **Second ICAO Global Runway Safety Symposium, Lima, Peru, 20 - 22 November 2017**

- **Panel 3 - Root causes of runway  
accidents and incidents**

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## Preliminary remarks

- Where the work started
- Cooperation is key to reducing risk
- GRSS 2011
- ACI APEX in Safety
- Runway safety teams

What are the different kinds of incidents and accidents in which an airport operator could have involvement in the root causes?

- Excursions
- Incursions
- Wildlife strikes
- FOD

## Excursions

There are many root causes of runway excursion (either on landing or rejected take-off) - one is poor braking action. This can be due to:

- Basic state of runway:
  - design and construction – material, surface texture and sub-texture
  - Maintenance issues, such as accumulation of rubber
- Contaminated runways
  - Measurement and reporting not adequate to inform the pilot – all parts of the industry are well aware of the issue
  - ICAO Global Runway Friction system is in place in Annex 14, for 2020 applicability worldwide. Uses RCAM – Runway Condition Assessment Matrix
  - Requires expert assessment of type and depth of contaminant
  - Training needed

## Incursions

There are many root causes of runway incursions – those related to the airport itself include:

- Incursions caused by aircraft: complexity of the layout of roads and taxiways adjacent to the runway, intersecting/crossing runways, insufficient spacing between parallel runways, departure taxiways that fail to intersect active runways at right angles, and no end-loop perimeter taxiways to avoid crossings.
- Incursions caused by drivers: Inadequate driver training, not obtaining a clearance or non-compliance with ATC instructions, not following Read-back and hear-back procedure
- For both: Visual aids: Inadequate or poorly maintained visual aids (including signs, marking and lighting)

- Two more root causes that have a lesser importance in the data, but nevertheless the risks must be constantly managed by the airport operator:
- Wildlife presence and risk of damage to aircraft from a strike
- Foreign object debris and risk of damage to aircraft

## Wildlife strikes

- 90% of strikes occur at or in the vicinity of aerodromes
- 50% of strikes occur below 100 feet
- Airports are attractive to wildlife - they are commonly one of the last large open green spaces in the surrounding environment
- Birds are a risk at all airports
- Land animals may also pose a threat



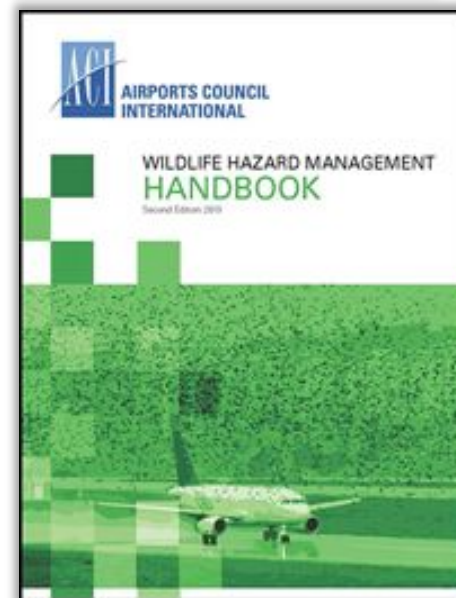
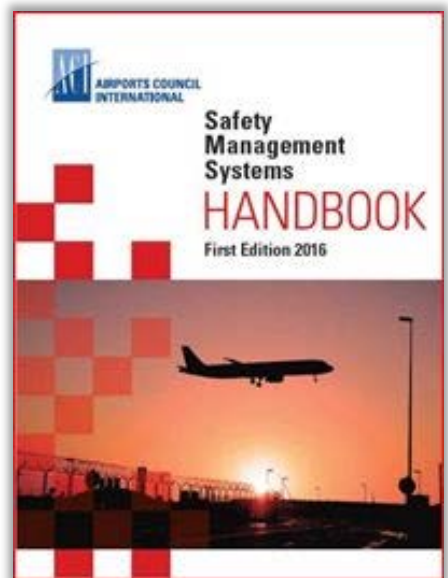
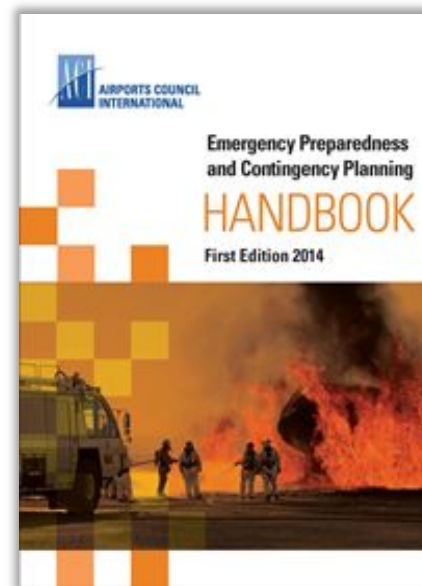
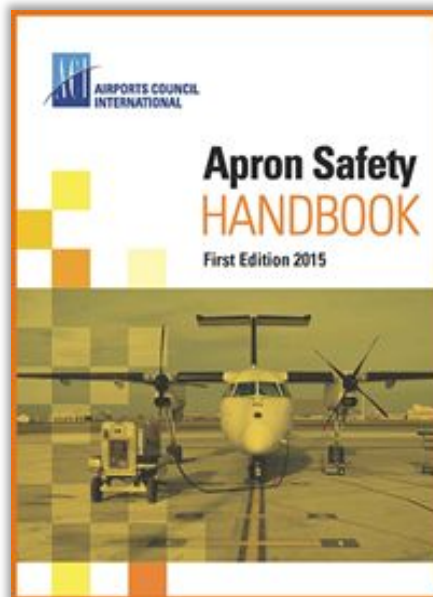
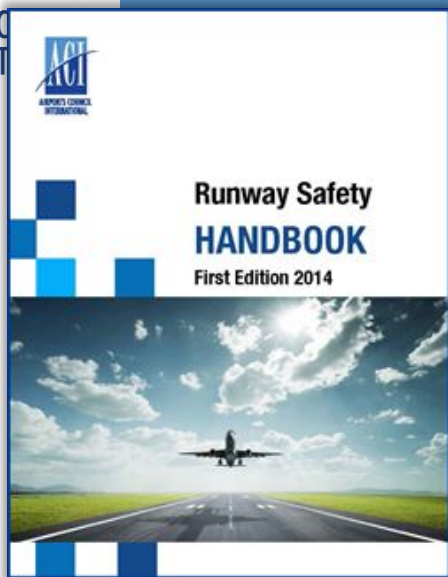
## FOD

- Visual inspections may not detect all FOD on runways
- Limitations of human vision : visual acuity, contrast sensitivity, light, weather conditions
- At one airport that has installed an automated FOD detection system, they found the following rates of FOD detection:
  - Visual Inspection: 3-5 pieces/month
  - Automated Surveillance: 30-35 pieces/month

## ACI Safety Data

- We intend to collect worldwide data (same data set for all regions)
- Number of each type of incident
- No data on individual incidents
- We intend to produce an annual publication of aggregate results (rate of incidents per aircraft movement) by region
- No data would be published for individual airports
- Pilot programme in 2018

# ACI Safety Handbooks

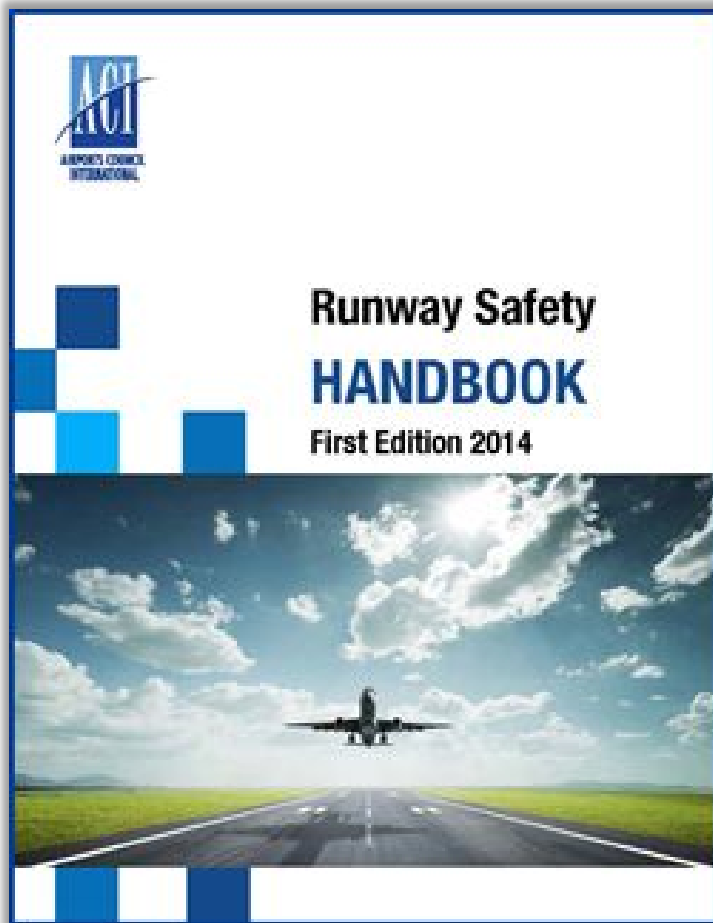


## Practical guidance for airport operators



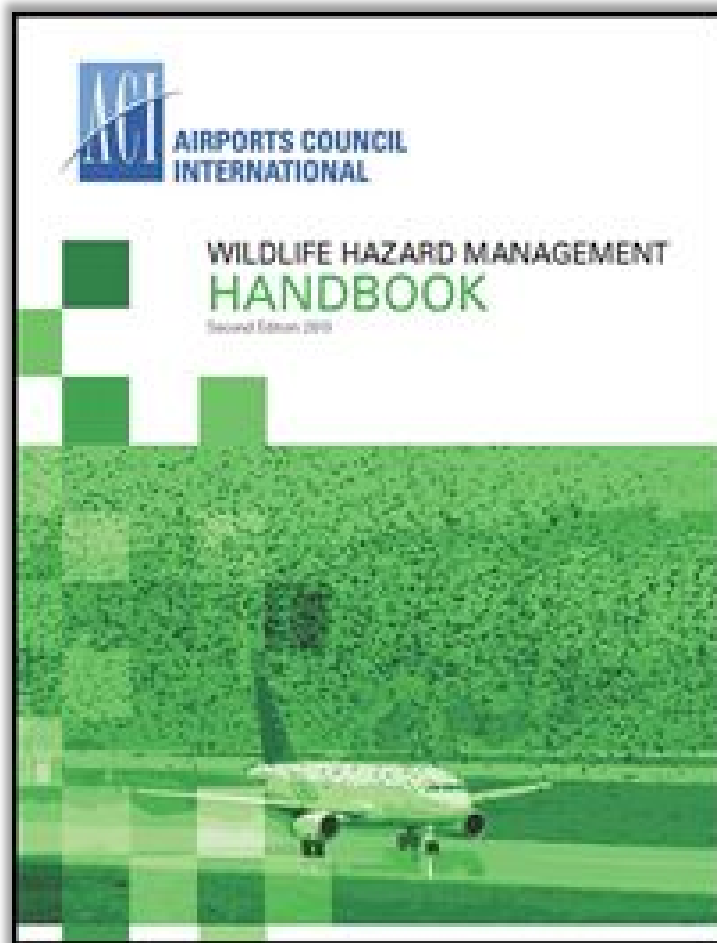
- Promote airport excellence through common standards and best practices
- Create programmes for Runway, Taxiway and Apron area safety
- Practical guidance for airport operators on Standard Operating Procedures (SOPs)
- State of the art recommendations and “Dos & Don'ts” – with explanations.
- Best industry practices – case studies and examples
- Safety Management Systems – specific guidance for setting up and improving airport SMS
- **By the professionals... for the professionals....**

# ACI Runway Safety Handbook



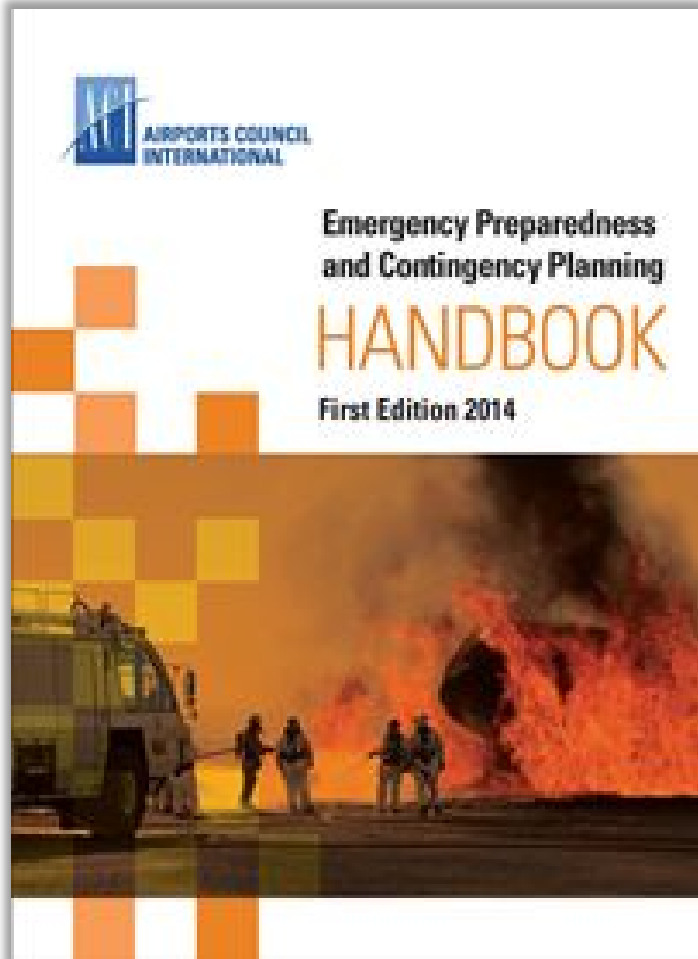
- This handbook provides guidance material for the development of a runway safety programme for all aerodrome (large or small).
- To achieve a “state of the art” level of runway safety.
- Helps to tailor, improve and expand existing programmes.

## ACI Wildlife Hazard Management Handbook



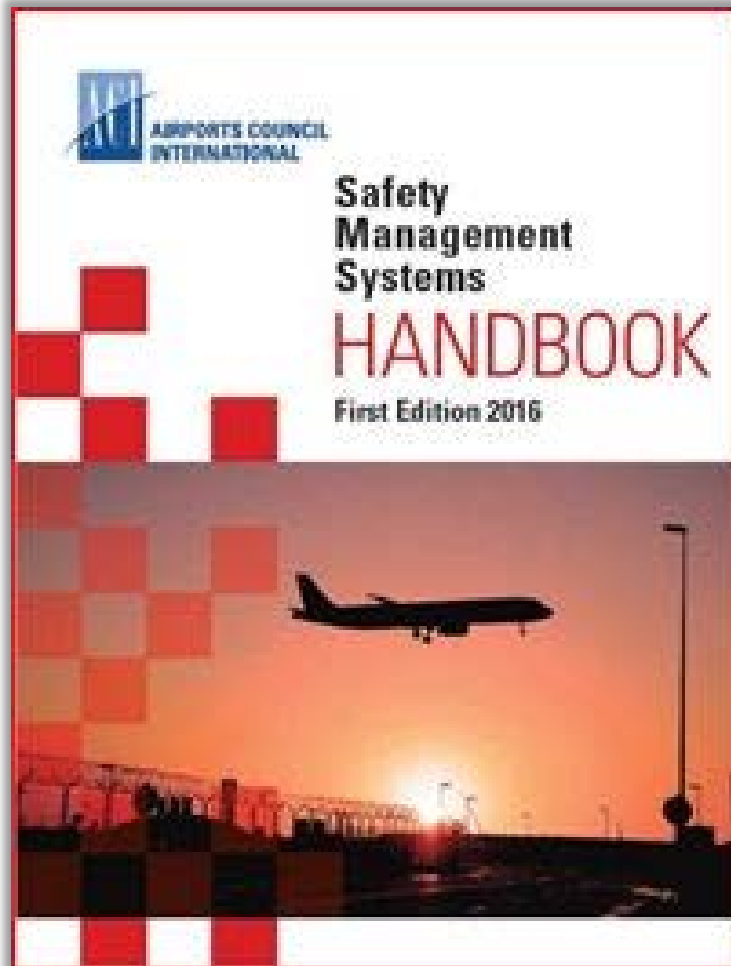
- Wildlife Hazard Management is an important element of the operations of all airports.
- Distilled from excellent guidance material from large Civil Aviation Authorities around the world, ACI Member Airports', ICAO material and other international aviation and non-aviation organizations'.
- While remaining short and succinct, it provides checklists for action, as well as an explanation of risks to be assessed and means of mitigation available.

## ACI Emergency Preparedness Handbook



- Bringing together best practices, knowledge and experience from aerodromes around the world.
- Assists aerodrome operators to develop and implement a robust aerodrome emergency plan, including restoration of operations after an emergency.
- Also deals with business continuity planning.
- Covers the roles and responsibilities of aerodrome operators, as well as coordination of emergency response plans with other organizations interfacing with the aerodrome during an emergency.

## ACI SMS Handbook



- SMS specific to Aerodrome operator.
- An action-orientated guide bringing together best practices, knowledge and experience from aerodromes around the world.
- To assist aerodrome operators to create a robust SMS using the Plan, Do, Check, Act method.





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