



Risk Management Considerations for The Use of 'Drones'

Definition:

The word 'drone' is a catch-all term that refers to any vehicle that can fly without a person on board to control it. The exclusion to the all-encompassing term is 'model aircraft' which are strictly for recreational purposes and not covered by regulation. The industry has various terminology associated with 'drones'. These are:

- UAV Unmanned Air Vehicle
- UAS Unmanned Aircraft Systems
- RPAS Remote Piloted Aircraft Systems (Transport Canada's terminology)

Drones come in various shapes and sizes and have a wide range of options and pricing. They can have high resolution cameras and sensors, be fixed wing or helicopter type of design. Drones run time varies from a few minutes up to four hours for the higher end models. Speeds in excess of 60 mph are available in some models.

Uses:

Drones are very flexible in terms of the tasks that they can perform. Some uses of drones are:

- surveying and mapping
- inspection of dams, bridges, roofs, buildings, offshore structures, open pit mines, pipelines

- inspection of wind turbines and solar farms
- crop surveys
- fire scene analysis and rescue operations
- police accident investigations
- package delivery
- post catastrophe survey for insurance claims
- thermal imaging for wildlife surveys
- taking water samples
- making movies or commercials
- property photos for real estate agents
- underwater inspections

Risk Identification Issues and Loss Reduction Recommendations

1. Radio Frequency Interference – this can result in lack of control of the drone and in the worst case cause it to crash. Survey your locations and ensure that it is not near transmitting towers.
2. Invasion of privacy and trespassing – when drones fly close to buildings, people's privacy may be breached. The privacy commissioner has issued a report entitled 'Drones in Canada' and dated March 2013 which outlines privacy concerns. Also, be aware that the Criminal Code may be invoked in litigation.

3. Collisions – the worst case scenario is the collision of a drone with a manned aircraft causing both to crash. Ensure that you are familiar with the hardware and software so as not to exceed the height limits.
4. Use of drones in windy conditions or bad weather can cause instability and lack of control. Check the weather forecast before launching.
5. Updrafts can cause a lack of control and damage especially if used in urban or mountainous areas. Ensure that you are familiar with the local conditions.
6. Drones should only be used during daylight hours. Dusk or night use or on a foggy day will render the line of sight requirement irrelevant.
7. Drones must always be in the line of sight of the controller. This is a basic rule for drones and is required to ensure that the operator has control.
8. Know the current Canadian Aviation Regulations to determine whether or not a Special Flight Operations Certificate is required. Currently, this process can take 3 weeks.
9. Know your equipment and how long the battery life lasts. Some units give warnings and return to home base prior to battery expiration. Be familiar with your equipment.
10. Before launching, check with your insurance company regarding liability coverage. Transport Canada states that a minimum coverage of \$100,000 is required.
11. Be aware of any potential cyber intrusions to the software. Check with the manufacturer on a regular basis.

Insurance

Insurance policies exclude drones from liability coverages, since drones are considered 'aircraft'. You will require an aircraft liability policy. Call your broker or insurance company agent before you launch. The minimum liability policy required by Transport Canada is \$100,000.

Regulations

Canadian Aviation Regulations are governed by Transport Canada (TC) which is the civil regulatory authority and the Department of National Defence (DND) which is the military authority. The Criminal Code may also apply to trespassing and privacy issues. Transport Canada can issue fines for non-compliance and criminal charges.

Registration

All drones that weigh between 250g and 25kg must be registered with Transport Canada. Pilots must mark their drones with their registration number before flying.

Certificates

You will need to carry a valid drone pilot certificate or a special flight operations certificate to fly your drone. You can find your drone category in the Transport Canada infographic flowchart which is attached. Because the marketplace and regulations are fluid, check online for the latest version of the requirements. canada.ca/drone-safety

The three drone categories that dictate what certificate you need are:

1. Basic operations: You need a pilot certificate to fly your drone 30 meters or more from bystanders or in uncontrolled airspace (where no air traffic control is provided).
2. Advanced operations: You need a pilot certificate to fly your drone less than 30 meters from or over bystanders or in controlled airspace with air traffic control approval.
3. A special flight operations certificate is needed if:
 - The drone is over 25kg.
 - The drones is less than 25kg and used to fly at an advertised event.
 - The drone is used to fly above 122 metres (400 feet).

KNOW BEFORE YOU GO!

HOW TO MARK YOUR DRONE:

REGISTER your drone through the Drone Management Portal.

MARK your drone with its registration number.

The registration number must be clearly visible on the drone.



YOU CAN USE

permanent marker

permanent label

engraving

C-1827459426

C-1827459426

C-1827459426

Canada.ca/drone-safety



Transport
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Transports
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KNOW BEFORE YOU GO!

FIND YOUR DRONE CATEGORY

YOU NEED A **PILOT CERTIFICATE – BASIC OPERATIONS** TO:

 <p>Fly +30 m from bystanders</p>	 <p>Fly in uncontrolled airspace (where no air traffic control is provided)</p>
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YOU NEED A **PILOT CERTIFICATE – ADVANCED OPERATIONS** TO:

 <p>Fly less than 30 m from or over bystanders</p>	 <p>Fly in controlled airspace with air traffic control approval</p>
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YOU NEED A **SPECIAL FLIGHT OPERATIONS CERTIFICATE** TO FLY:

 <p>At an advertised event</p>	 <p>A drone over 25 kg</p> <p>25kg+</p>	 <p>Above 122 metres (400 feet)</p> <p>122 m+ (approximately a 30-storey building)</p>
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Canada.ca/drone-safety



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