



# 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's Unmanned Air Vehicle (most common)
- UAS Unmanned Aircraft Systems
- RPAS Remote Piloted Aircraft Systems

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 make sure you have Transport Canada permissions (if required) and 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. Whether or not you need permission to fly a UAV is presented in a Transport Canada infographic flowchart which is attached. At the time of this writing (October 10, 2017) there are new proposed rules being considered but not yet law. Because this marketplace and regulations are fluid, check online for the latest version of the requirements. [canada.ca/drone-safety](http://canada.ca/drone-safety)

The key items that dictate whether you need TC permission are:

1. is the UAV used for work/research or recreation?
2. is the weight of the drone 1 kg or less, 1 kg to 25 kg or greater than 35 kg?

TC can issue fines for non-compliance and/or criminal charges.

## Recreational Use

If the recreational drone is more than 35 kg then a Special Flight Operations Certificate (SFOC) is required.

If the recreational drone is less than 35 kg then no formal application to TC is required. However, the rules for safe flying must be followed. See TC infographic flowchart attached.

## Commercial, Non-Recreational Use

For this category of use, application to TC for an SFOC is required or you can operate under an exemption (See TC infographic flowchart attached).

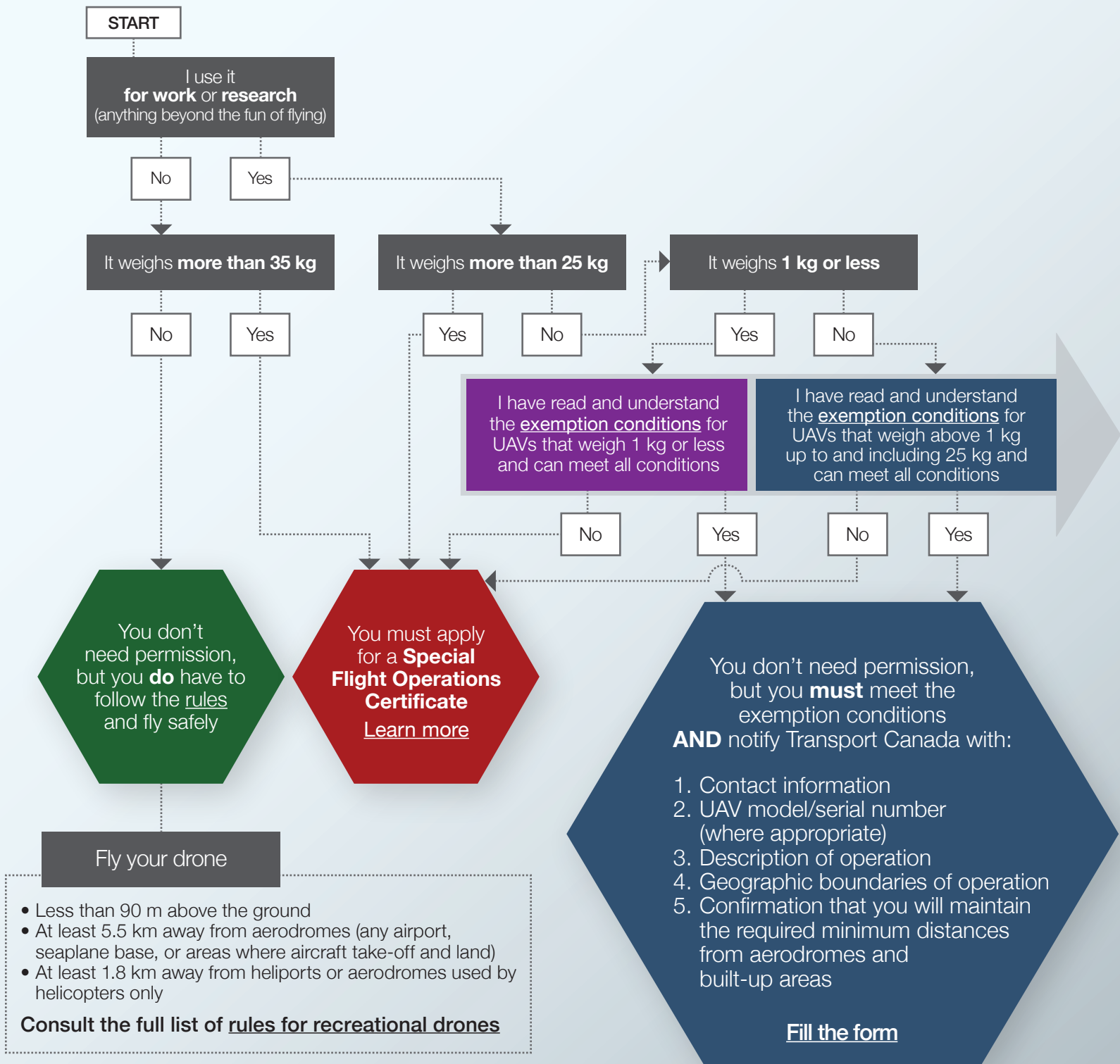
Note: Any drone, for whatever use, that weighs more than 35 kg requires an SFOC.

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# Do I need permission to fly my drone?





# FLYING FOR FUN?

## RULES FOR RECREATIONAL DRONE USERS

Consult the [safety measure](#) for the full list of rules.

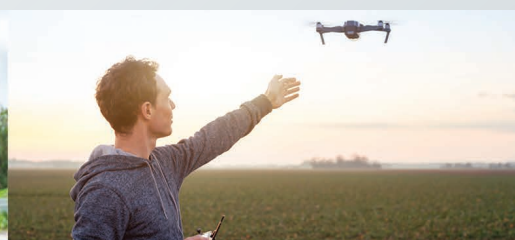
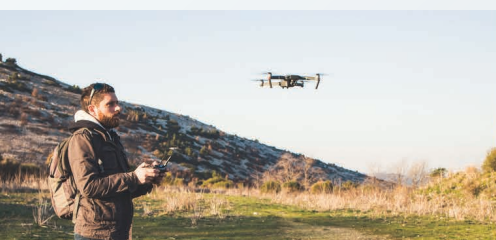
**It's the law!** If you fly your drone for fun and it weighs more than **250 g** and up to **35 kg**, follow these rules.

### Fly your drone:

- within 90 m above the ground or lower
- at least **30 m away from vehicles, vessels, and the public (if your drone weighs more than 250 g up to 1 kg)**
- at least **75 m away from vehicles, vessels, and the public (if your drone weighs more than 1kg up to 35 kg)**
- at least **5.5 km from aerodromes (any airport, seaplane base, or areas where aircraft take-off and land)**
- at least **1.8 km away from heliports or aerodromes used exclusively by helicopters**
- outside of controlled or restricted airspace
- at least 9 km away from a natural hazard or disaster area
- away from areas where it could interfere with police or first responders
- during the day and not in clouds
- within your sight at all times
- within 500 m of yourself or closer
- only if clearly marked with your name, address and telephone number



Following these rules will help keep people, aircraft, and property safe. If you do not follow these rules, you could face fines of up to \$3,000.







Transport  
Canada

Transports  
Canada

# Do I qualify under the UAV exemptions?

The exemptions only apply to operators flying for **work** or **research**.

If you operate your drone for recreation, visit Transport Canada's website to learn how to fly safely and legally: [www.Canada.ca/drone-safety](http://www.Canada.ca/drone-safety).

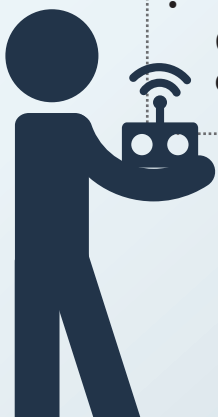


Yes

- You fly for work or research.
- You have **at least** \$100,000 of liability insurance.
- You have read the applicable exemption document, understand and can follow **all** conditions.
- You have notified Transport Canada **before flying** by filling out the exemption notification form.

No

- You are flying recreationally **(these exemptions only apply to non-recreational operators)**.
- You cannot meet the safety conditions (in which case you must apply for a Special Flight Operations Certificate).
- You are a foreign operator (non-Canadian).





# If I do qualify, where may I fly?

If your UAV weighs 1 kg or less, refer to this [official exemption document](#).  
You must comply with the entire list of conditions.

UAV  
of 1 kg  
or less



- Keep UAV in sight at all times.
- Don't fly higher than 90 m (300 feet) above ground.
- Always stay within 500 m (0.25 nm) of your UAV.



Stay away from controlled airspace, restricted airspace, and forest fire zones.



Stay 9 km (5 nm) from registered airports/registered water aerodromes.



Stay 5.5 km (3 nm) from all heliports and any non-registered aerodromes.



**Never fly over or within a built-up area.**

LEGEND:  
NM: nautical mile  
KM: kilometre  
M: metre





# If I do qualify, where may I fly?

If your UAV weighs more than 1 kg to 25 kg, refer to this [official exemption document](#). You must comply with the entire list of conditions.

UAV of  
more than  
1 kg to  
25 kg



- Keep UAV in sight at all times.
- Don't fly higher than 90 m (300 feet) above ground.
- Always stay within 900 m (0.5 nm) of your UAV.



Stay away from controlled airspace, restricted airspace, and forest fire zones.



Stay 9 km (5 nm) from registered airports/registered water aerodromes.



Stay 5.5 km (3 nm) from a built-up area.



Stay 5.5 km (3 nm) from all heliports and any non-registered aerodromes.

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