

AE Safety – Quadcopter and Drones

Hazard Description: Quadcopters and drones involve exposed, moving parts that can cause serious injury and/or damage. Personnel injury may occur due to mishandling of the quadcopters and/or drones.

Warning: Follow ALL manufacturer's safety instructions. In any case where these instructions and the manufacturer's instructions differ, use the one that is more restrictive and/or provides an added layer of safety. Please note that small quadcopters with plastic props should be used until you become proficient as a quadcopter/drone pilot.

Warning: The public is very concerned that quadcopter and drones represent a major threat to individual privacy. Don't do anything that might cause people to think you are intruding on their privacy.

Prior to the activity:

- Determine if there are any local rules and regulations regarding the type, size, and launching of quadcopters and/or drones within your community.
- Do not use the quadcopters/drones near people, power lines, or other objects.
- Inspect the quadcopters/drones for damage.
- Do not modify the quadcopter/drone in any way.
- Ensure that a first-aid kit is available.
- Charge the batteries according to the manufacturer's directions. Do not leave batteries to charge overnight.
- Appoint a Safety Observer to ensure that safety is maintained throughout the activity. The Safety Observer shall have no other duties. If the activity is to take place over an extended period of time, appoint two or more Safety Observers that can take turns and prevent fatigue.
- Safety Observers do not eliminate the need for all participating members to be vigilant. Encourage all participants to speak up if they see something that may be unsafe. Stop the activity until the issue is resolved.
- Ensure that the unit commander is aware of the quadcopter/drone activity.

At the beginning of the activity, provide a safety briefing:

- Brief all of the manufacturer's safety precautions. Note any items where an additional layer of safety has been added by the activity director.
- If the activity is run outdoors, only use the quadcopter/drone in safe weather condition. Check the weather prior to the launch. If lightning has been seen within 10 miles of the launch site, postpone the activity. Continue to monitor the weather throughout the launch period.

During the activity:

- **AT NO TIME** is any member to place any portion of the body into moving portions of the quadcopter/drone, especially near or into the moving propellers. This includes, but is not limited to, the face and arms.

- Personal Protective Equipment (PPE) should be used whenever possible. The need for PPE should be made on a situation-situation basis. This could include hard hats (to protect the head from falling drones), or eye protection (to protect from shattering propellers)
- Use a countdown before launch. Ensure everyone in the area is paying attention.
- Prior to use, verify that the transmitter controls move.
- Prior to use, verify that the transmitter controls have been returned to the neutral position.
- Prior to use, verify that the transmitter throttle has been reset to zero.
- Ensure that all people and animals in the area are out of the flight area.
- Prior to takeoff, stand clear and announce “CLEAR”
- At the beginning of takeoff, increase the throttle slightly and check for abnormalities. Hover at 3-5 feet for a few seconds to check stability. Land the craft if it is not stable or if abnormalities are noted.
- Never fly over 400 feet above the ground. Always maintain direct Line of Sight with your quadcopter/drone.
- Do not depend on built-in “Fail Safes” to compensate for loss of control of your craft.

After the activity:

- After landing, disarm the transmitter and disconnect the transmitter battery.
- Disconnect the quadcopter/drone battery.
- If possible, remove the propellers when working on the quadcopter.
- Inspect the quadcopter/drone for damage, including landing gear, wiring, batteries, propellers, and all connections.
- Discharge the batteries to prepare for transport and storage.
- If your system uses lithium or lithium-ion batteries that have been expended: Many places consider lithium and lithium-ion batteries to be hazardous materials. To properly dispose of li-ion batteries, it is recommended that you take them to a battery recycling location or contact your local waste management service provider for disposal instructions. Put batteries in a sealed metal container before recycling them.