

Summary: Hazardous Chemicals, Activities, or Devices (HCAD)

The **Hazardous Chemicals, Activities, or Devices (HCAD)** rules governed by the Regeneron International Science and Engineering Fair (ISEF) outline the regulatory, safety, and operational standards for pre-college research involving high-risk materials, devices, or procedures.

1. Prohibited Studies

Student researchers are strictly prohibited from conducting the following:

- **Prescription Drugs:** Using prescription medications outside of their prescribed purpose.
- **Controlled Substances:** Conducting studies with DEA-controlled substances in a home or school setting.
- **Alcohol Distillation:** Distilling ethyl alcohol for consumable purposes.
- **Age-Restricted Purchases:** Underage purchasing or consumption of alcohol, tobacco, or vape products; or purchasing firearms, ammunition, black powder, or explosives.
- **Excessive Radiation Exposure:** Any project exceeding Nuclear Regulatory Commission ionizing radiation limits (0.5 mrem/hr or 100 mrem/year of exposure).

2. General Compliance & Chemical Safety

- **Risk Assessment & Supervision:** Students must conduct a thorough risk assessment in collaboration with a Direct Supervisor (DS) or Qualified Scientist (QS) prior to experimentation.
- **Safety Data Sheets (SDS):** SDS ratings (GHS and NFPA hazard scales) must be reviewed and factored into safety planning. Standard lab safety procedures, proper ventilation, and EPA-compliant disposal procedures must be strictly followed.
- **Hazardous Chemicals:** Chemicals classified as carcinogenic, teratogenic, or toxic to reproduction must be handled at a Regulated Research Institution (RRI) or inside a restricted-access fume hood.
- **Equipment Reuse:** Cookware, utensils, or equipment used during chemical experimentation must never be reused for household purposes.

3. Rules by Category

Category	Key Requirements & Limitations
DEA-Controlled Substances	Must be conducted at an RRI licensed by the DEA under the direct supervision of a Qualified Scientist. Schedule 1 substances require prior DEA protocol approval
Prescription Drugs	Must be acquired through a licensed practitioner/researcher or as research-grade products (not for human consumption). Animal administration requires veterinarian supervision.
Alcohol & Tobacco	Fermentation producing minute quantities of alcohol is permitted. Distillation for fuel/non-consumable use must occur at a school or RRI. Adult home brewing/winemaking requires direct parental supervision.
Firearms & Explosives	Requires direct supervision, proper state certifications/training, and compliance with federal/state laws. Rocket propellants fall under federal explosive regulation.
Drones (UAS)	Must comply with all local, state, FAA, and national aviation regulations.
Radiation & High Vacuum	• <10: Home/school allowed; risk assessment required. • 10: Requires SRC pre-approval, metal chamber with camera viewing (no glass/direct view), and a dosimeter/survey meter. • >25: Must be conducted under a Licensed Radiation Program with RSO/Committee pre-approval.

4. Permits & Licenses: Any federal/state permits or regulatory licenses must be secured prior to research and attached to the project paperwork