

Summary of Applicable Laws Regarding Motor Scooters and Hydrogen Transport

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Motor Scooter Legality

- Illinois Motor Vehicle Code (DOT) – Statute 625 ILCS 5/11-1403.5
 - It is not legal to operate motor scooters on any roadway, sidewalk, bike path, or trail without proper registration and approval by each local jurisdiction we would like to ride in.
 - Our cart fits the definition by law of a motor scooter--"motorized scooter" means a device upon which a person may ride consisting of a footboard between end wheels, controlled by an upright steering handle attached to the front wheel, powered by a motor having a maximum piston displacement of less than 25 cubic centimeters or an electric driven motor
- Wisconsin Motor Vehicle Code -- § 180-17 Unlawful operation
 - Same as IL law

As a result, we would have to register our cart in every municipality we would like to drive through. It is beyond the cost limitation, time, and focus of our IPRO to get proper approval from all necessary municipalities we would drive through on a 100-mile route between Chicago and Milwaukee. Instead it has been discussed that with the approval of our sponsors the 100-mile drive would be completed through laps in a parking lot or around campus.

Hydrogen Transport

All of these codes are to be met for proper, road-safe vehicles. We do not have a road-safe vehicle, much less a vehicle. Thus these codes are open to our interpretation and application to the cart. Also, no codes have been published regarding fuel cell powered vehicles, much less vehicles run on hydrogen. Currently a taskforce of largely ASME and ANSI members is developing a set of international codes and standards for fuel cell vehicles and the use of hydrogen as a commodity fuel but nothing has been formally approved.

- Federal Hazardous Materials Regulations (DOT and Hazmat) – 49 CFR 100 – 800
 - 49 CFR 172 – The shipping of Hydrogen (hazard class 2.1)
 - All non-permanent hydrogen cylinders must be labeled with the following
 - Proper chemical name
 - “Flammable Gas”
 - UN1049, international chemical code
 - Portable Tanks
 - 49 CFR 177.840 – Transport of Class 2 (gases) Materials
 - Cylinders must be ANSI approved compressed gas cylinders
 - All cylinders must be transported on flat platform or floor on a suitable frame of a vehicle
 - Cylinders must be securely restrained → Cannot shift or be ejected and cannot hit another cylinder
 - Cylinders cannot be stacked. Horizontal cylinders must be transported horizontally and vertical cylinders must be transported vertically.
 - Must be separated (1.5 m) from Oxidizing agents such O₂
 - Special codes exist for cryogenic liquid hydrogen
- State Hazardous Materials Transport Code
 - Largely quotes 49 CFR
 - Any transporter of hazardous materials must have a State permit

- Chicago Fire Codes – NPFA 50A & 50B
 - Only apply to bulk storage vessels (> 11 CM) or multiple systems with one or more cylinders each
 - No applicable codes were observed for our system