MICRO FUEL CELLS TRANSPORT REGULATION FRAMEWORK

As portable electronic devices continue to evolve, current battery technology is having trouble keeping pace. From the United States to Europe and Asia, consumer electric manufacturers are developing micro fuel cell technologies to power the next generation of laptop computers, cellular phones and other essential modern devices. And in the portable electronics world, each new generation is only a year or two away. Using methanol as a hydrogen carrier fuel, micro fuel cells represent a completely new portable power technology. New safety codes and transportation regulations are now being developed to ensure that this technology is safe to put in the consumer's hands. Standards and regulatory requirements have existed for many years for batteries and consumer electronics products. Fuel cell equipment will need to meet the existing standards for electronic products plus new requirements specific to fuel cell equipment. The fuel cell industry has been working in this effort with U.S. and international authorities having jurisdiction, as well as standards development organizations.

International regulatory authorities at the United Nations working with the U.S., Japan and other delegations have established the basic requirements for cargo shipping of methanol fuel cell cartridges and fuel cell electronic equipment in all modes of transport. As the safety codes and requirements evolve, regulatory provisions will be sought from authorities to allow passengers to carry and use these devices in the same manner as battery powered equipment is allowed today. These include authorities with jurisdiction over civil aircraft; cargo by road, rail and vessel; passenger transit by road, rail and vessel; and postal requirements.

> *"There is considerable speculation that lack of suitable regulations for fuel cells will be one delaying factor in their implementation in many markets, not least in the portable sector. However, over the last year in particular, the situation has begun to change with considerable effort expended on creating and standardizing rules and regulations (as well as fueling issues)."*
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> **Fuel Cell Today, September 1, 2004**

Safety Codes & Standards Being Developed

Underwriters Laboratories Inc. (UL): The fuel cell industry is working with UL to develop a commercial safety code (UL 2265) for the design and manufacture of methanol fuel cell cartridges. UL has announced the publication of an Outline of Investigation, Subject 2265A, covering the safety certification of methanol-fueled micro fuel cells for use in information technology equipment (ITE). With this newly published document, UL can now immediately provide safety certification services for micro fuel cells intended for industrial or commercial ITE, while the full standard (ANSI/UL 2265/CSA America FC11) covering a wider range of products is under development. **www.ul.com**

International Electrotechnical Commission (IEC): The fuel cell industry and UL are working with the IEC to develop international standards (IEC TC 105) for the performance, safety and interchangeability of methanol fuel cell devices and fuel cartridges. Initiated in 2002, it is expected that this safety standard will be completed in draft form during 2005, with the performance and interchangeability standards being completed sometime thereafter. **www.iec.ch/**

International Transportation Requirements Being Developed

UN Committee of Experts on the Transport of Dangerous Goods (UN TDG): Methanol fuel cell powered electronic products may be cargo-shipped today as UN 3363 (Dangerous goods in machinery or apparatus). On December 1st, 2004, the UN Committee of Experts approved a proposal from the U.S. Department of Transportation creating a new UN shipping name, number, and packing instructions for the cargo shipment of methanol fuel cell cartridges. The new shipping description and packing instruction for fuel cell cartridges containing flammable liquids, removes the subsidiary toxic risk for methanol as these cartridges are designed to prevent any consumer contact with the methanol fuel. The model regulation will be forwarded to international transportation modal agencies and to member nations for enactment. **www.unece.org/trans/danger/danger.htm**

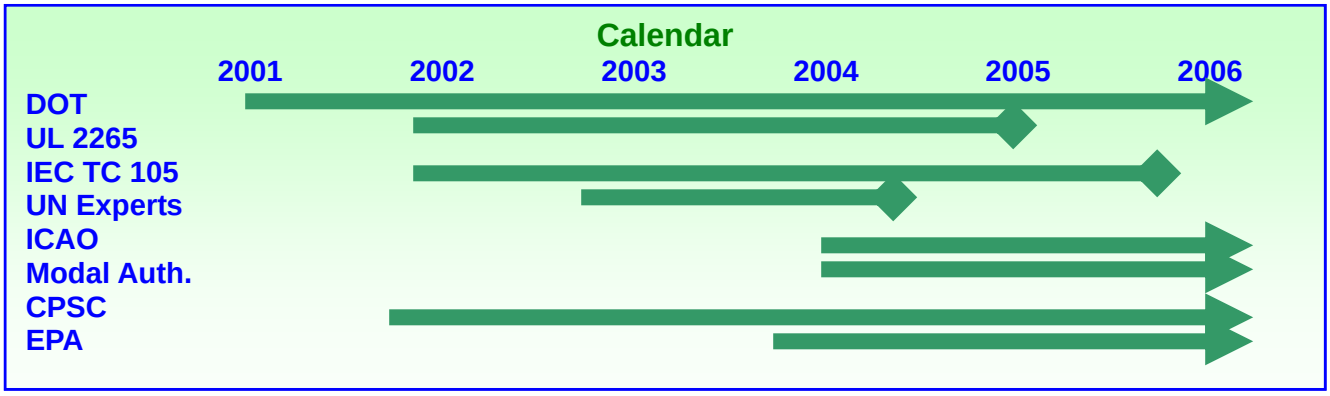
International Civil Aviation Organization (ICAO): The U.S. DOT presented a briefing paper on methanol fuel cells and cartridges to the ICAO Dangerous Goods Panel at their October 2004 meeting. ICAO was informed of the proposal for new shipping description and packaging instructions now before the UN Committee of Experts. The U.S. DOT indicated its intention to seek allowance for airline passengers to use and carry these kinds of products. It is likely the U.S., Japan, possibly other nations and the fuel cell industry will work with ICAO over the next two years to review issues of aircraft cargo shipments and allowances for passenger use and baggage. **http://icao.int/**

International Road/Rail and Maritime Organizations: International transportation authorities over road, rail and vessel cargo shipping will review the UN model regulation, if enacted, for incorporation into their requirements. These include European regulatory authorities over rail, road and inland waterways (RID/ADR/ADN), and international organizations for carriage by rail and vessel. In the U.S., these transportation authorities are consolidated largely in the U.S. DOT. It is intended that suitable requirements be enacted to provide transport safety and convenient cargo and parcel shipments of fuel cell electronic products and cartridges to retailers and consumers.

Consumer and Environmental Protection Initiatives

Consumer Product Safety Commission (CPSC): Federal consumer protection laws and the CPSC regulate many aspects of safety for personal consumer electronics using fuel cells. Safety standards already in existence and those being developed by UL and IEC will be important in providing proper protection to consumers. The CPSC has been directly involved in the UL and IEC codes and standards development activities, and have assisted the methanol fuel cell industry in understanding the federal requirements for consumer product safety and compliance. **http://www.cpsc.gov/**

US Environmental Protection Agency (EPA): The EPA, Rochester Institute of Technology and US Fuel Cell Council have begun a project to review a range of environmental issues. Included are issues of waste disposal and alternative options for end-of-life strategies for fuel cell cartridges and fuel cell electronic equipment. **http://www.epa.gov/**



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