1 Day Course Outline On Managing Risk And Safe Handling In Electrical Hazards

by Ir. Ng Win Siau

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On the 8th June 2016, the Electrical Engineering Technical Division organized a course on Managing Risk and Safe Handling in Electrical Hazards, conducted by Mr. Andrew Anthony, a national accredited leading trainer of the Department of Safety & Health (DOSH) and the National Institute for Occupational Safety and Health (NIOSH).

Electricity, a form of energy that is produced from the flow of electrons, while being cost effective and clean has the characteristic of not being visible, audible nor give out any smell. The types of electrical hazards includes electric shock, lighting, fire and electrostatic discharge. These characteristics and the hazards posed by electrical power necessitates adequate awareness, proper and safe handling, and usage of an electrical installation to manage the risks associated.

Electric shock occurs when a person comes into contact with a live electrical conductor. The electric shock causes muscles to shorten and spasm. In severe cases, it may affect the victim's heart or cause respiratory failure. Lighting hazard occurs when an electric arc or welding flash affects a victim's eyes that is exposed to the high intensity light. Electrical fire hazard arises from the ignition of any combustible material that is exposed to the heat produced by electricity flow, such as an electrical arc or a poor contact in an electrical circuit. An electrostatic discharge of significant charge content may cause an electric shock or may be an ignition source in a highly flammable environment.

A person's endurance to electric current flow through the body depends on the age, gender, body resistance and health level. The severity of the electric shock depends on the current and voltage, duration of current flow, and current flow path through the body. Safe use of electricity require the implementation of circuit protection devices, isolating switches, regular equipment maintenance and repair, earthing and user protection.

All electrical equipment need to be protected from overload by a suitable fuse or circuit breaker. Isolating switches are important to allow switching off and isolation of circuit. Proper maintenance and repair keeps the equipment safe for use while damaged equipment should be isolated and prevented from inadvertent use. The maintenance work by itself should be regulated and performed by a competent person to ensure safety during and after the maintenance work. Correct earthing of metallic body parts of an electrical equipment creates a safe leakage path that operates protection devices when a live part touches the equipment body, therefore tripping and isolating the circuit. User protection can be in the form of warning signages, conductor insulation and barricade, emergency stop switch or switch interlock, and residual current devices (RCDs).

Electrical safety is regulated by the Electricity Supply Act 1990, Electricity Supply Regulations 1994, Occupational Safety and Health Act 1994 (OSHA 1994), and the relevant Malaysian Standards referenced by the regulations. The regulations govern the various stages of electrical installation and equipment, from design and construction to the implementation and usage.