Report of incident

**Background:** On previous day, with a very little time left for closing of office, an attempt to take a trial of the Arduino system with heater & humidity controller was made in a hurry. The circuit didn't work as expected. Moreover, the project test area was in chaos with the table unclean & the cables were a mess increasing the confusion & chances of accident. The experience was chaotic and unfruitful as well.

**Objective:** To test the working of Arduino & GSM communication with mobile via SMS.

**Process:**

Step 1: To discuss the points noted in previous attempt of trial- "The LED was not glowing nor the SMS were received on mobile".

Step 2: It was decided to carry out the test again but without facing the same chaos. The team basically avoided to go to the heater area because of untidiness & unorganised cable laying.

Step 3: The team brought the Arduino system (which includes GSM module), power supply adapters (2 nos., each for Arduino & GSM module) & humidity controller.

Note: Due to the disturbance in working area & hence lack of focus, the team did the wrong connections unknowingly.

Step 4: The Arduino system was powered up, by plugging in both the adapters.

Step 5: The humidity controller input supply cables were plugged into 230V AC supply socket.

Step 6: The (relay) output of the humidity controller was connected to Arduino cables, set aside to connect to the contactor.

Step 7: The 230V supply for humidity controller was turned ON and BOOM!!!

The Arduino got exploded as the 5V DC cable shorted with 230V AC supply. The IC broke into 2 pieces and the track on the PCB of Arduino was burnt.

**Improvements implemented:**

1) Cleaning of test-bench before every trial.

2) After each circuit modification in the circuit, update the circuit diagram.

3) Tagging the ports of electrical components (eg. Contactor, relay, power supply, phase-neutral) where wire is to be connected.

4) Refer to the circuit diagram while making the connections. Double check the connections before powering up the circuit.

5) Wrapping the wires using wire-sleeve, wherever necessary (eg. to prevent shorting, wire grouping). Using transparent sleeve, wherever necessary. Applying hot-air using blower for packing of sleeve ends.

6) Arduino & GSM module supply pins were shorted. Single power supply adapter (previously 2) was used considering the maximum current capacity (Voltage rating was same for both).

7) Making sure that the SMS communication is well in network.

8) Including warning on circuit diagram sheet-

"Connect the 5V wires on Contactor port as mentioned. Do not connect 5V wires with 230V AC components- Humidity controller, Heater or AC supply"