**12.3 Chemistry laboratory**

At every stage in life we are connected to different aspect of chemistry directly or indirectly. Be it agriculture, food, medicine, fertilizers, polymers, metallurgy etc. Thus the knowledge of chemistry is imperative. To develop or analyze or synthesize different compounds or substances there exists a requisite of chemistry laboratory.

The chemistry lab is designed to support and illustrate chemical concepts studied in the lecture portion of the course, as well as to introduce important laboratory techniques and encourage analytical thinking.

* School chemistry laboratory deserves to be equipped to cater the needs of the students up to standard 12.
* Students show great enthusiasm in hands on experiments by using laboratory chemicals.
* The use of smart board with real/animated version of experiments increases the interest of students.
* It is mandatory for the lab to be well equipped with all safety measures. The established guidelines by CBSE are to be followed.
* The lab inculcates curiosity in students and plays a very important role in developing a scientific temperament.
* Chemistry laboratory is designed to provide practical applications for many of the concepts and chemical principles learned in the class.

**Importance of chemistry laboratory**

* Chemistry has a great importance in life, so it is very important for students to understand lab work.
* A student can easily develop his ability of understanding the chemical experiments.

**Understanding different compounds and their function**

* It is important to know, how a compound works optimistically.
* How the properties of compound give suitable results in a practical way?
* Use of an element to combine with other element/s in lab gives perfect compound.

**Reactions and its product in real way**

* What is studied in a book will be there in front of us trough lab work.
* Time consumed in a chemical reaction varies, but with the help of lab work we can easily understand it in a proper way.

**Use of chemicals in a proper way**

* Quantity of an element or compound to be used in very important for getting a perfect result.
* If the use of chemicals is not in required quantity, problems are expected to take place.
* Through chemical reactions we can calculate the exact amount of chemicals to be used.

**Enhance the interest in experiments**

* Lab work is important in boosting up the interest in different experiments.

**Proper ability of explanation of an experiment**

* With the help of lab work we do the experiment and work everything properly and can explain the steps or the sequence of the procedure followed. This develops an ability of explanation of an experiment.

**The exact way of using catalyst**

* Sometimes a catalyst is required to boost up the reaction, a compound that does not take part in chemical reaction directly.
* With the help of lab work we can easily understand its exact action and how to use catalyst in different reactions.

**Use of different apparatus in a practical way**

* It is important to know about the way to use the different apparatus in chemistry lab.
* Proper care and handling the apparatus results in proper understanding of the use of it.

**Clear the view of a student**

* Through various observations students can easily clear their view.
* They understand its exact use in life, but only through the experiments.
* The need to describe the observations whenever asked enhances the concentration level of the student.

**Safety measures**

* In almost all chemistry labs, laboratory hazards are there. These include poisonous chemicals, flammable and explosive materials, extreme temperature, lasers, strong magnetic fields and high voltage etc.
* Therefore safety precautions are vitally important to minimize the risk of any untoward incident or accident.

**Things to be avoided in the laboratory**

* Avoid wearing open-toed shoes.
* Keeping long hair in control.
* No smoking, eating or drinking in the lab.
* No erasing of the data from the note book.
* No late coming.
* Always label the sample or material.
* Use of gloves is recommended when sterility is needed.
* Proper ventilation in the lab.
* Educators, staff and management must be engaged in working to reduce the likelihood of accidents and injury. Efforts are needed to show laboratory safety videos in order to ensure safety.

**How chemistry laboratory is different from physics laboratory**

* It is said that there is much more physics in chemistry lab than there is chemistry in physics lab,
* In a chemistry lab experiment, an experimenter usually analyses the physical properties of the chemical substance alongside analyzing the chemical properties
* The electron is basically a physical entity and its mass, charge, and energy that define its existence are all physical properties.
* Mostly all instruments that are essential for a chem. Lab are physical instruments, such as voltmeters, ammeters, spinners, mass-spectroscopes, microscopes, cloud chambers etc.
* Pipettes and burettes are precision instruments designed with the consideration of thermal expansion constants.