Water Quality Analysis

Proper Sampling

Proper sampling is a vital condition for correct measurement of water quality parameters. Even if advanced techniques and sophisticated tools are used, the parameters can give an incorrect image of the actual scenario due to improper sampling. The proper sampling should fulfill the following criteria:

(i) **Representative:** The data must represent the wastewater or water body being sampled. So, the following factors must be well planned for proper sampling:

(a) Process of Sampling
(b) Sampling size/volume
(c) Number of Sampling Locations
(d) Number of Samples
(e) Type of Samples
(f) Time Intervals

During sampling, these factors must also be taken care of:

- Choosing of proper sampling container
- Avoiding contamination
- Ensure the personal safety of the collector

(ii) **Reproducible:** The data obtained must be reproducible by others following the same sampling and analytical protocols.

(iii) **Defensible:** Documentation must be available to validate the sampling procedures. The data must have a known degree of accuracy and precision.

(iv) **Useful:** The data can be used to meet the objectives of the monitoring plan.

Proper Labeling

Proper labeling prevents sample misidentification and ensures the responsibility and accountability of the collector. The sample container should be labeled properly, preferably by attaching an appropriately inscribed tag or label. Alternatively, the bottle can be labeled directly with a water- proof marker. Barcode labels are also available nowadays.

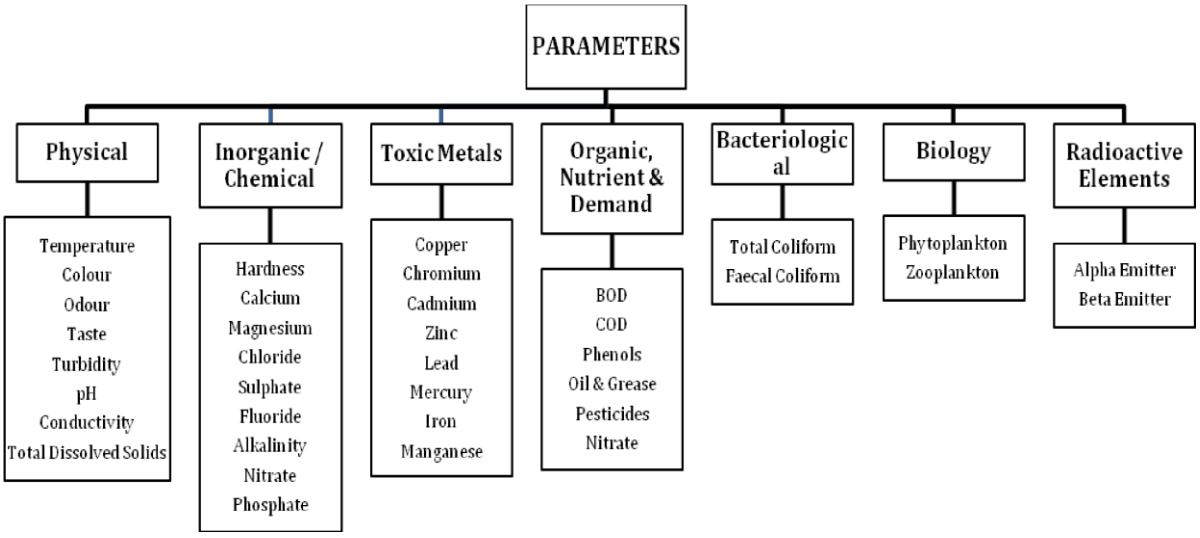
Information on the sample container or the tag should include at least:

(i) Sample code number (identifying location)
(ii) Date and time of sampling
(iii) Source and type of sample
(iv) Pre-treatment or preservation carried out on the sample
(v) Any special notes for the analyst
(vi) Sampler's name

Preservation

- Usually a delay occurs between the collection and analysis of a sample. The characteristics of the sample can be changed
- during this period. Therefore proper preservation is required in the way to laboratory after collection, and in the laboratory up to when analysis starts.
- Complete and unequivocal preservation of samples, whether domestic wastewater, industrial wastes, or natural waters, is a practical impossibility because complete stability for every constituent never can be achieved. At best, preservation techniques only retard chemical (especially, hydrolysis of constituents) and biological changes that inevitably continue after sample collection.

Figure -2: Parameters for Water Quality Analysis



when the data are to be used for regulation or litigation. Where litigation is not involved, chain-of-custody procedures are useful for routine control of samples.

- No single method of preservation is entirely satisfactory; the preservative is chosen with due regard to the determinations to be made. Preservation methods are limited to pH control, chemical addition, the use of amber and opaque bottles, refrigeration, filtration, and freezing.