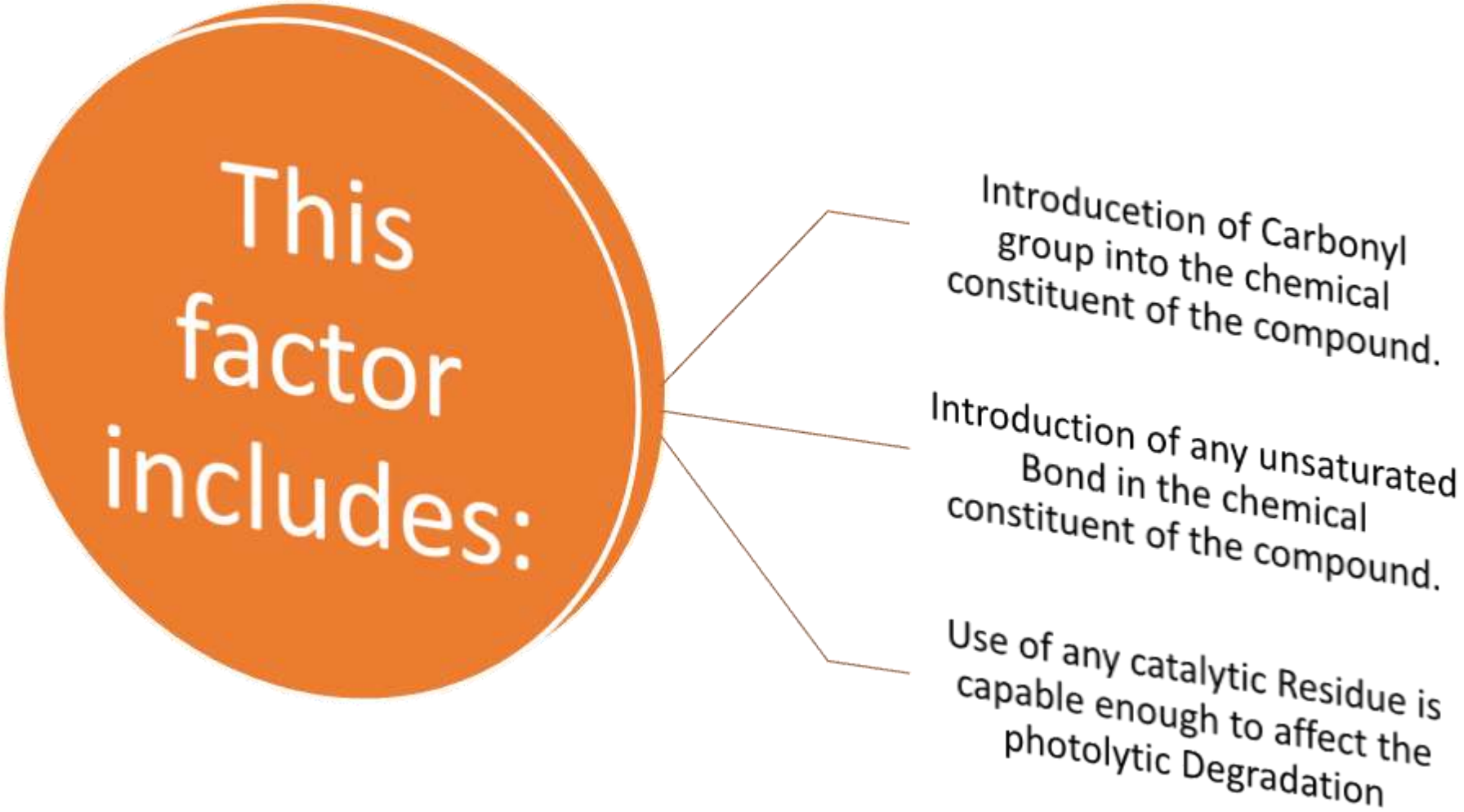
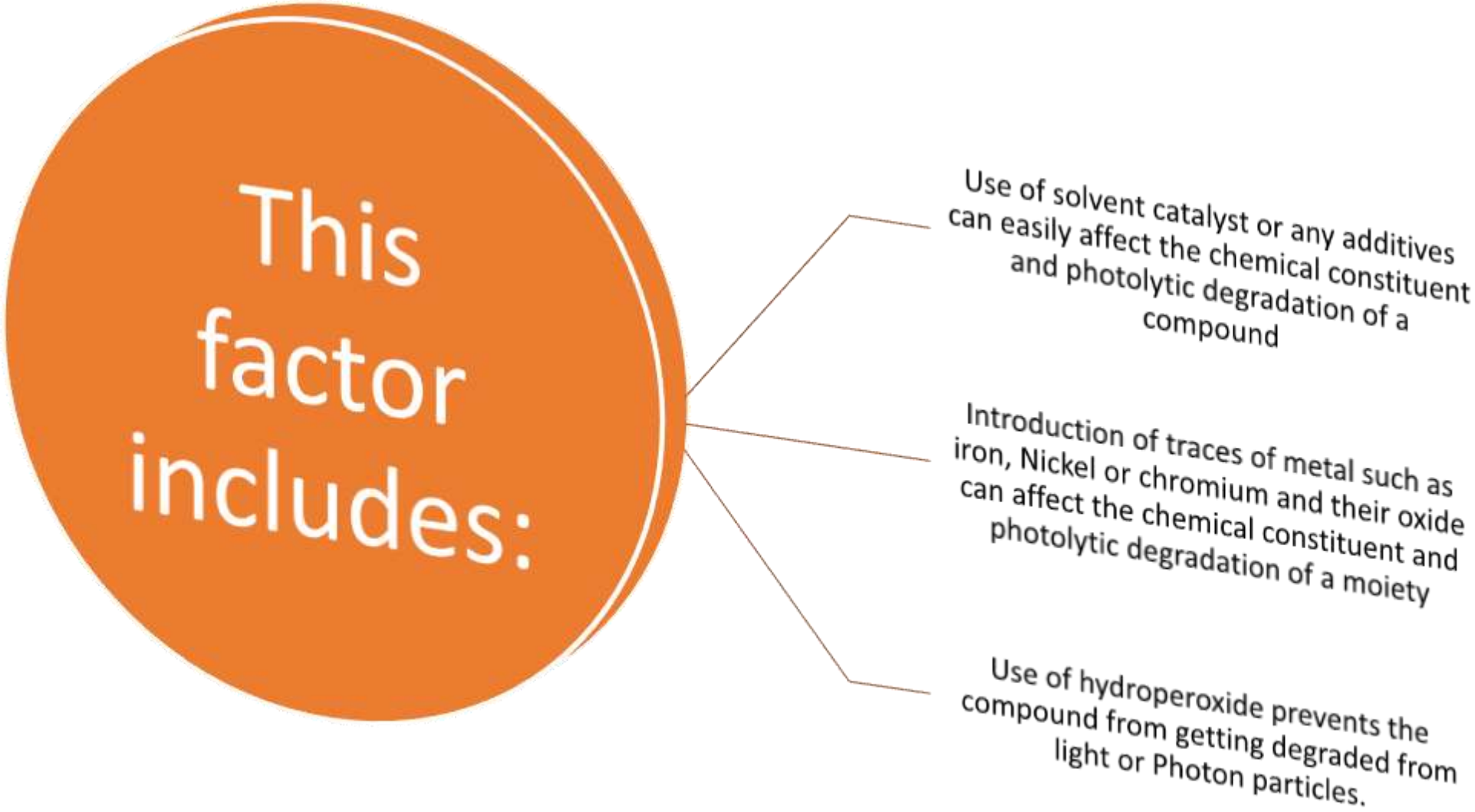
PHOTOLYTIC DEGRADATION


Any change or alteration on the main chemical constituent of a drug, food, paints, dyes, inks, pesticides, etc., due to light or Photon particles.
The term photolytic Degradation is coined due to the action of Sunlight and air on a product, causing both oxidation and hydrolysis.
Furthermore, the various consequences of photolytic degradation will be recognized.
Besides, you will know the different methods by which you can protect a chemical from being degraded due to light and photon particles.

FACTORS RESPONSIBLE

- certain factors that are responsible for photolytic Degradation
- These factors are essential to determine the degradation rate due to light




This factor includes:
Use of solvent catalyst or any additives can easily affect the chemical constituent and photolytic degradation of a compound
Introduction of traces of metal such as iron, Nickel or chromium and their oxide can affect the chemical constituent and photolytic degradation of a moiety
Use of hydroperoxide prevents the compound from getting degraded from light or Photon particles.

Effect of photolytic Degradation

- Both physical and chemical effects take place
- Physical changes can be observed by naked eyes but chemical effects need to be tested

- The main effects that can be observed are-

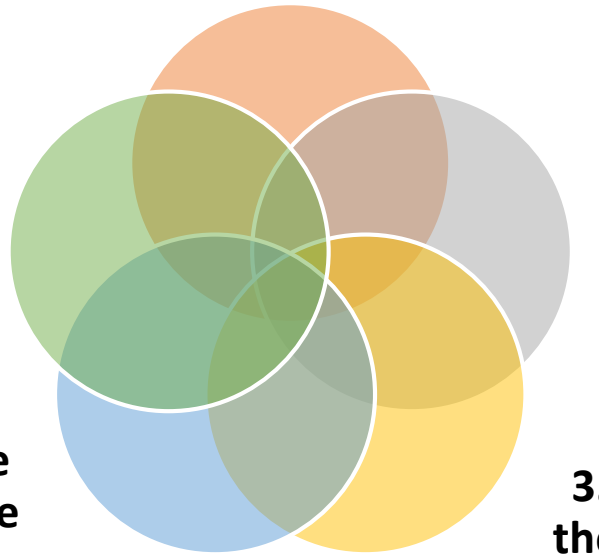
1. Photolytic degradation Effect the color of a chemical moiety

2. It is capable of affecting the solubility of a compound

3. It can affect the Pka value of the compound

4. It is capable of affecting the order of the compound

5. It can change the viscosity and dissociation constant of a compound



Prevention from photolytic Degradation

When some nutrients are exposed to sunshine, they degrade hence food must be protected

In the case of beer, UV light induces the breakdown of bitter hop chemicals to 3-methyl-2-butene-1-thiol, resulting in a change in flavor. Beer bottles are frequently composed of amber- colored glass, which has the potential to absorb UV light and so avoid this process.

Organic paints, inks, and dyes are more photodegradable than inorganic paints, inks, and dyes.

Ceramics are nearly commonly colored with non-organic origin materials in order for the material to withstand photolytic degradation and retain its colour even under the harshest conditions.

Because of the scope of agriculture and the extensive usage of chemicals, the photolytic degradation of pesticides is of major interest.