The twelve principles of Green Chemistry

1. **Prevention**
   Try not to make waste, then you do not have to clean it up.

2. **Atom economy**
   The final product should aim to contain all the atoms used in the process.

3. **Less hazardous chemical synthesis**
   Wherever it is possible, production methods should be designed to make substances that are less toxic to people or the environment.

4. **Designing safer chemicals**
   Chemical products should be designed to do their job with minimum harm to people or the environment.

5. **Safer solvents**
   When making materials try not to use solvents or other unnecessary chemicals. If they are needed then they should not be harmful to the environment in any way.

6. **Design for energy efficiency**
   The energy needed to carry out a reaction should be minimized to reduce environmental and economic impact. If possible, processes should be carried out at ambient temperatures and pressures.

7. **Use of renewable feedstocks**
   A raw material should be renewable wherever possible.

8. **Reduce derivatives**
   Try not to have too many steps in the reaction because this means more reagents are needed and more waste is made.

9. **Catalysis**
   Reactions that are catalysed are more efficient than uncatalysed reactions.

10. **Design for degradation**
    When chemical products are finished with, they should break down into substances that are not toxic and do not stay in the environment.

11. **Real-time analysis for pollution prevention**
    Methods need to be developed so that harmful products are detected before they are made.

12. **Inherently safer chemistry for accident prevention**
    Substances used in a chemical process should be chosen to minimise the risk of chemical accidents, including explosions and fire.