

To emphasize/clarify some of the text in the book, please see the following information below:

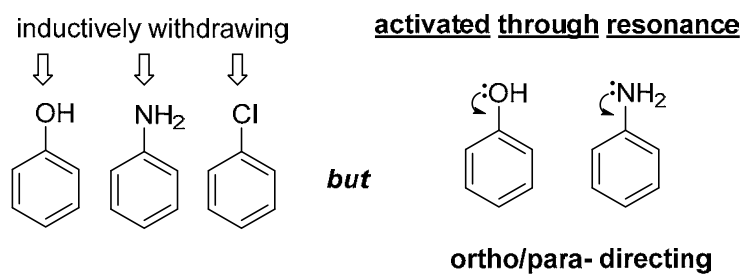
1. Resonance is more important in activating or deactivating an aromatic ring than inductive effects.
2. Resonance is more important in directing electrophilic aromatic substitutions than inductive effects.
3. Activating aromatic substitutions are ortho/para directing
4. Deactivating aromatic substitutions are meta-directing

PLEASE NOTE:

► Electronegative atoms such as **oxygen**, **nitrogen** and **halides** are deactivating through induction but can be activating through resonance (= more important than induction) via their lone pairs of electrons.

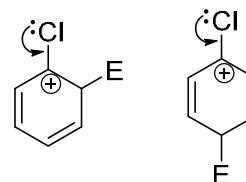
► Therefore, if these atoms are on an aromatic group, activating through resonance dominates, and they are ortho/para directing.

Examples:



ortho/para- directing

Halogens are typically considered deactivating (i.e. they are less reactive than benzene), **but** due to their lone pair they can stabilize a positive charge and they are therefore also:



ortho/para- directing

deactivated through induction



meta- directing