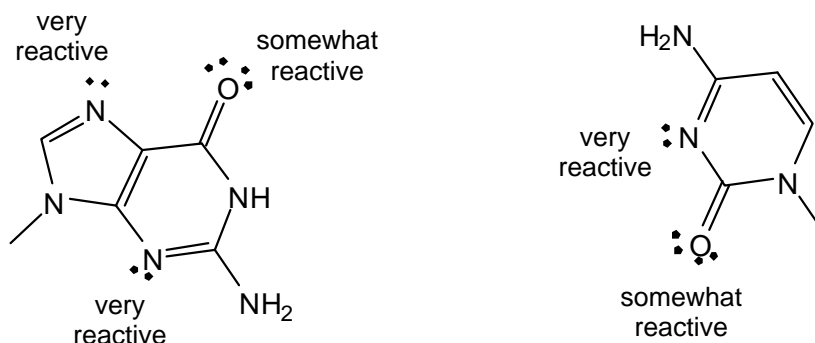


### Workshop 12 Solutions Chemotherapeutic Alkylating Agents

a)



These molecules have three types of lone pairs ready for nucleophilic attack: (i) lone pairs on nitrogen that are not involved in resonance structures, which are very reactive; (ii) lone pairs on oxygen, which is more electronegative than N, and so less willing to give up the lone pair; and (iii) lone pairs on N that participate in resonance structures (on all N's above where lone pairs are not drawn in). Reaction of these would eliminate resonance stabilization of the molecule, and so these are unreactive.

b)

