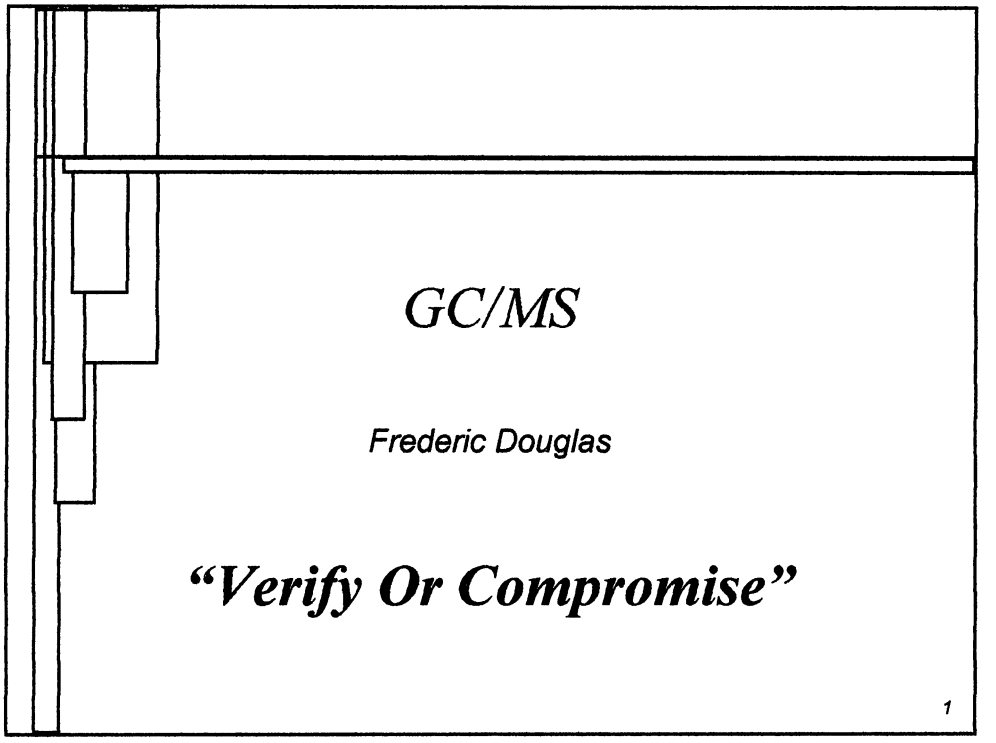
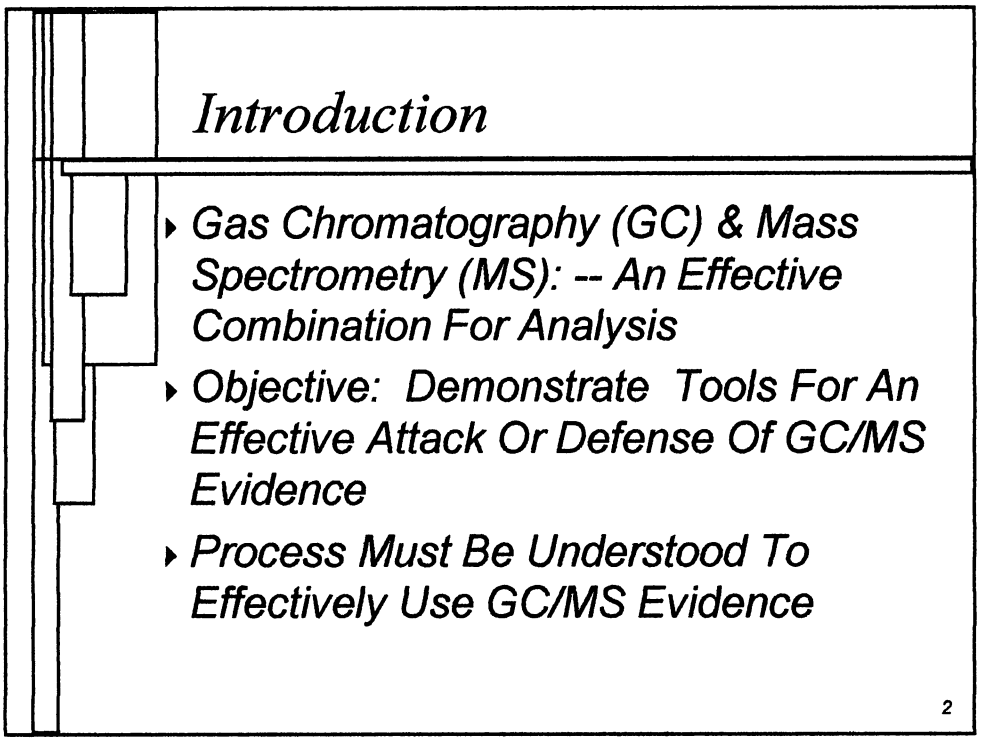
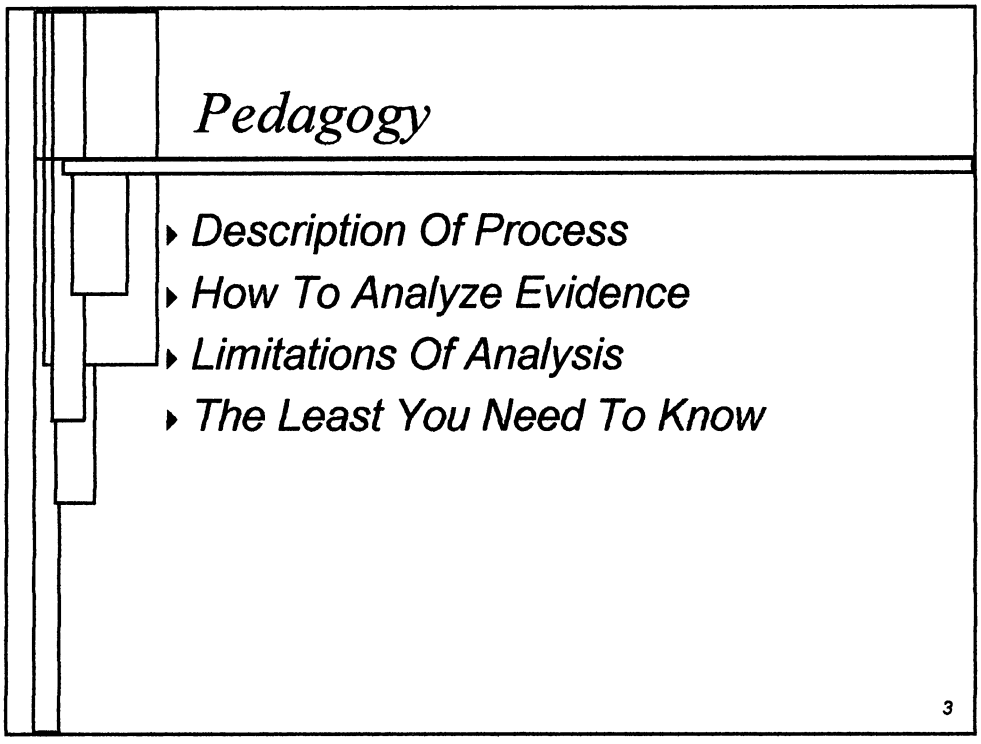


U.S. Navy
Hair Analysis
"Ur-ine Trouble" by Kent Holtorf, M.D.

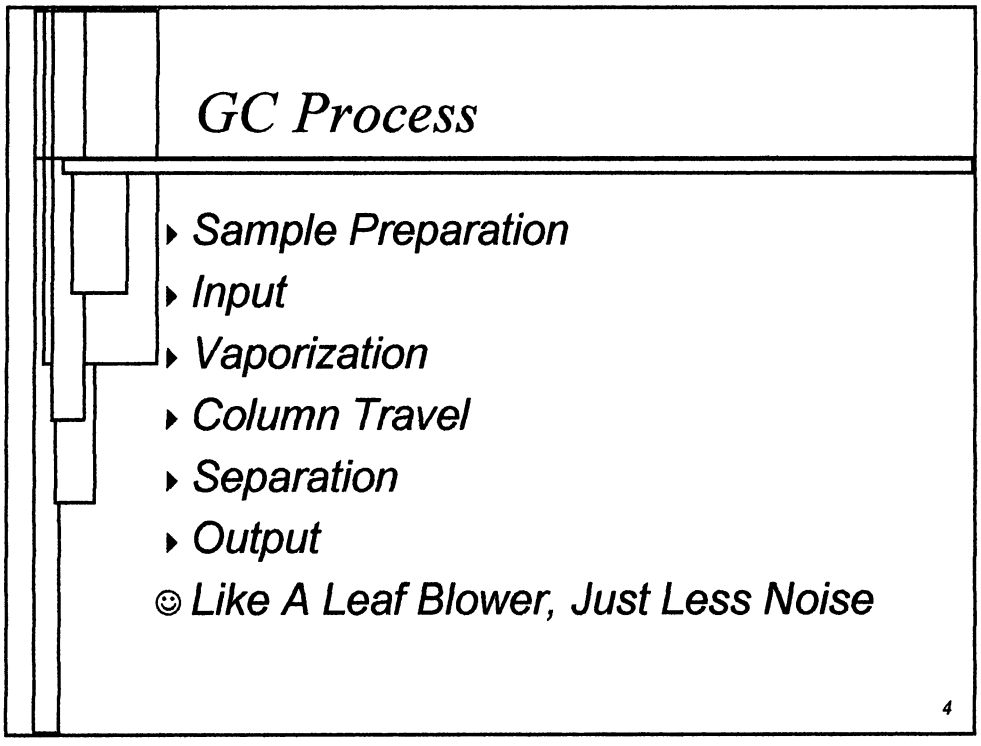


Drug Test Confirmation

Familiarity with GC/MSevidence May assist support or attack of evidence



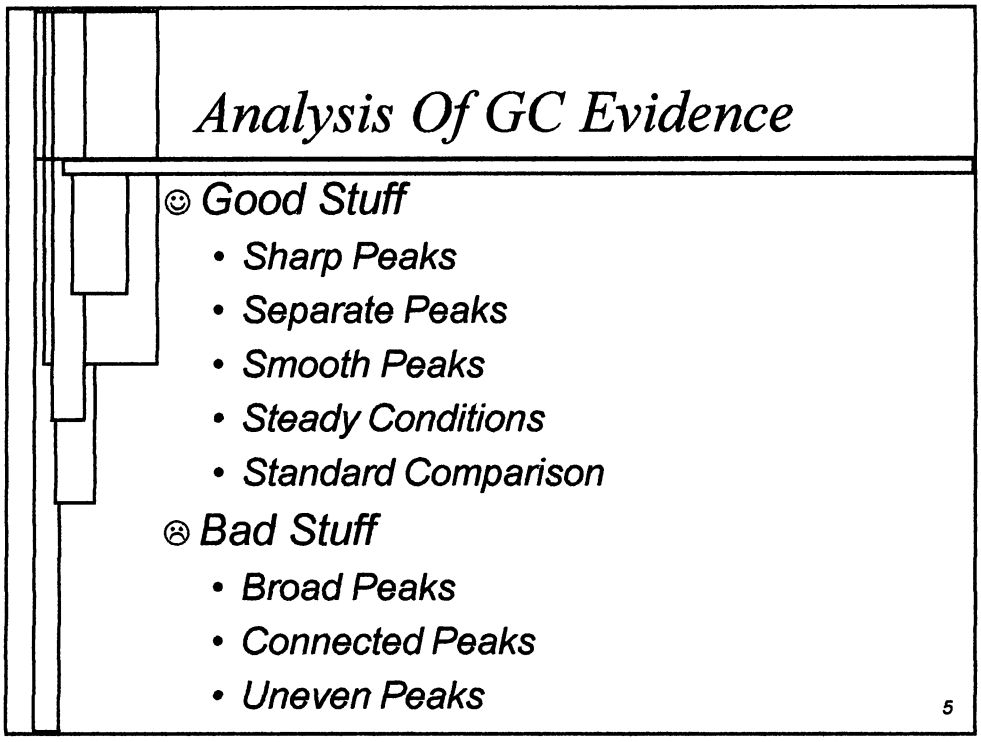
"Least You Need To Know" -- GC/MS For Dummies!



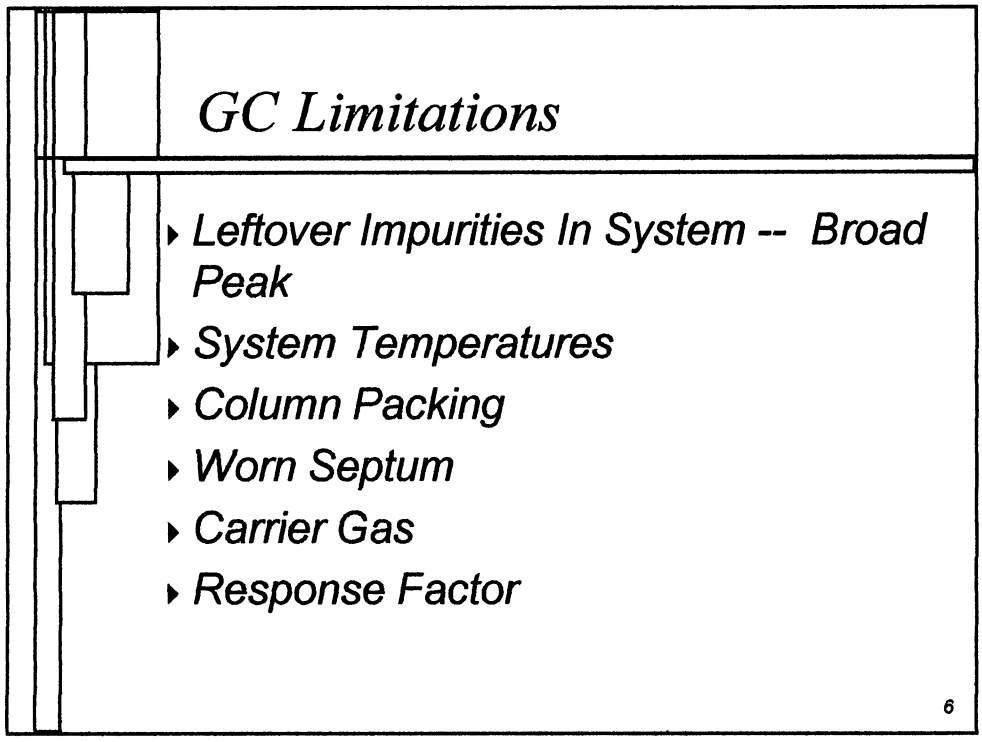
Next, show transparency with diagram of process

Column Travel -- Show eddy current diagram

Talk about Detection



Show 2 transparencies showing Text Examples of Bad and Good Peaks before this slide



Leftover impurities -- very important

Temps

Injection: Too High --> sample may decompose or change structure

Too Low --> Sample doesn't vaporize. Poor separation or no peak.

Column: Too High --> Poor separation

Too Low --> Substance may remain in system, no peak.

Carrier Gas: Thermal Conductivity Detector and carrier gas

Hydrogen --> May react, broad peak

Unstable Flow Rate --> broad peak

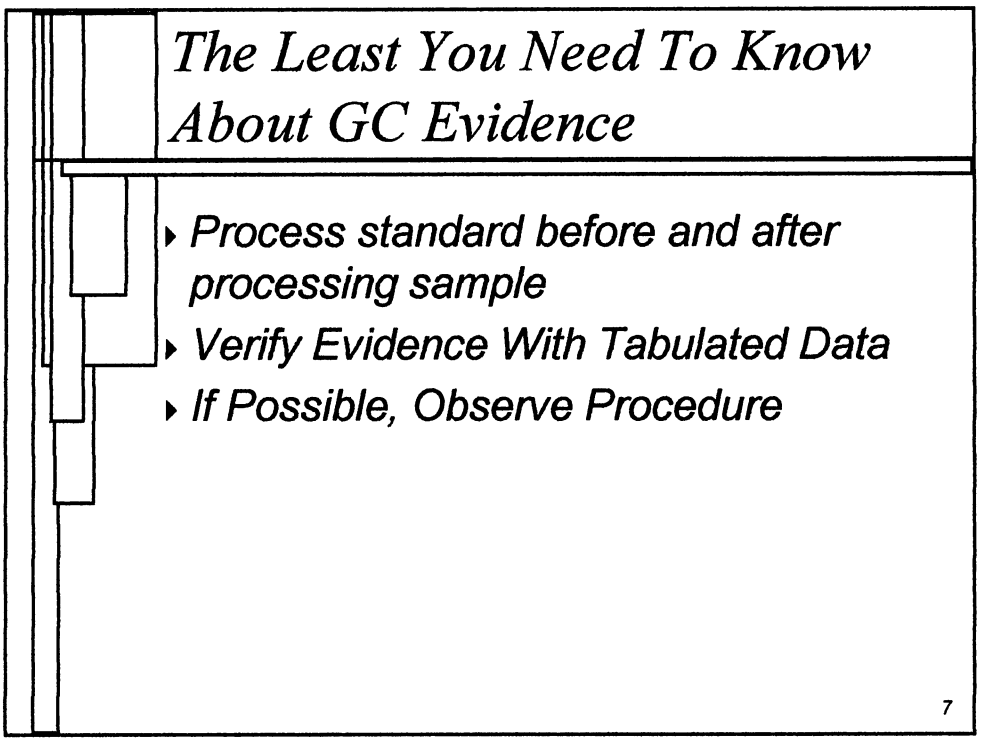
--> Drifting baseline

Impurities --> Change Filter

2 Different compounds May Have Same Retention Time (e.g. DDT & PCBs

Response Factor -- Different Detectors respond differently for same number of molecules. Response factor varies over time.

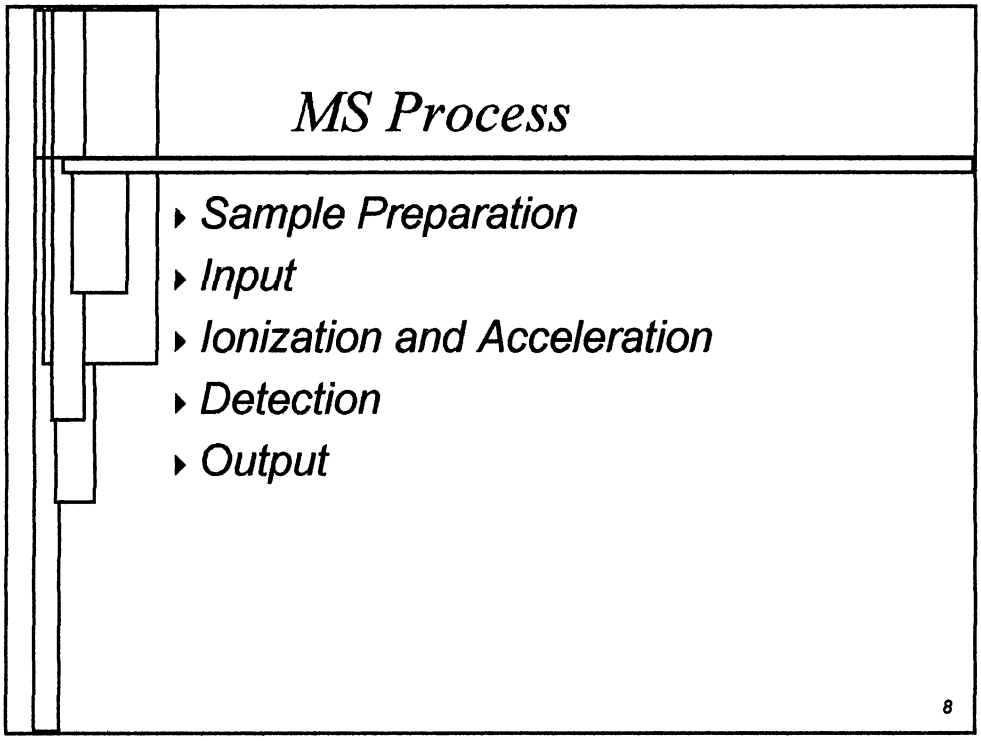
Cardinal Rule: Run Standard, sample, then standard again



No competent scientist runs w/o standard

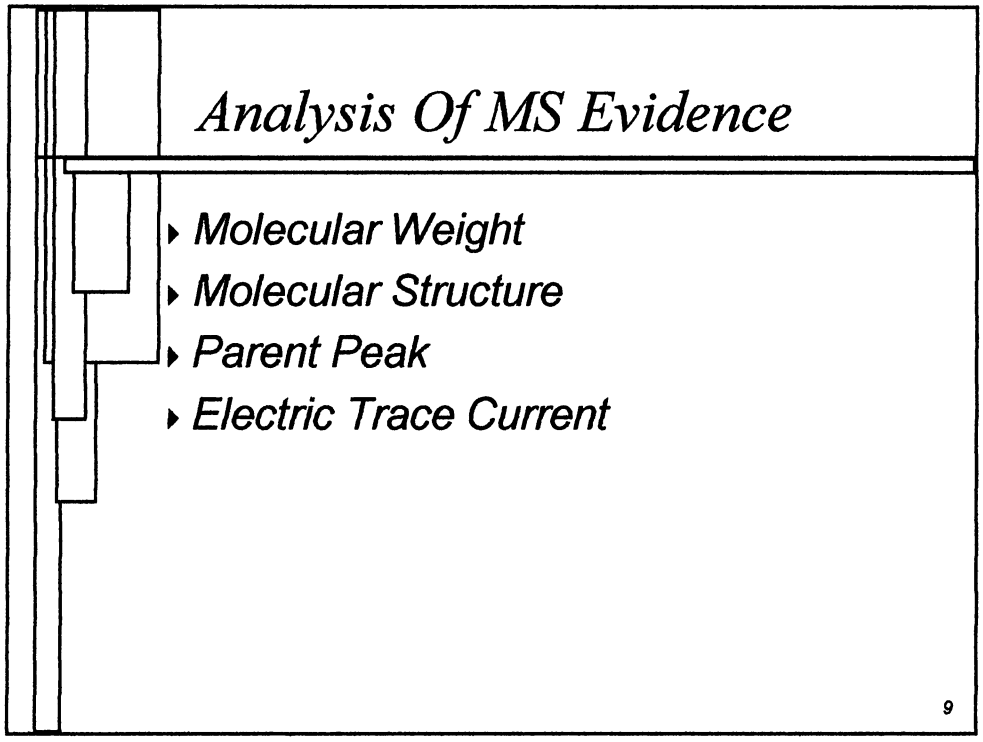
Observe analysis to record conditions

Tabulated data available from library, computer, or manufacturer.



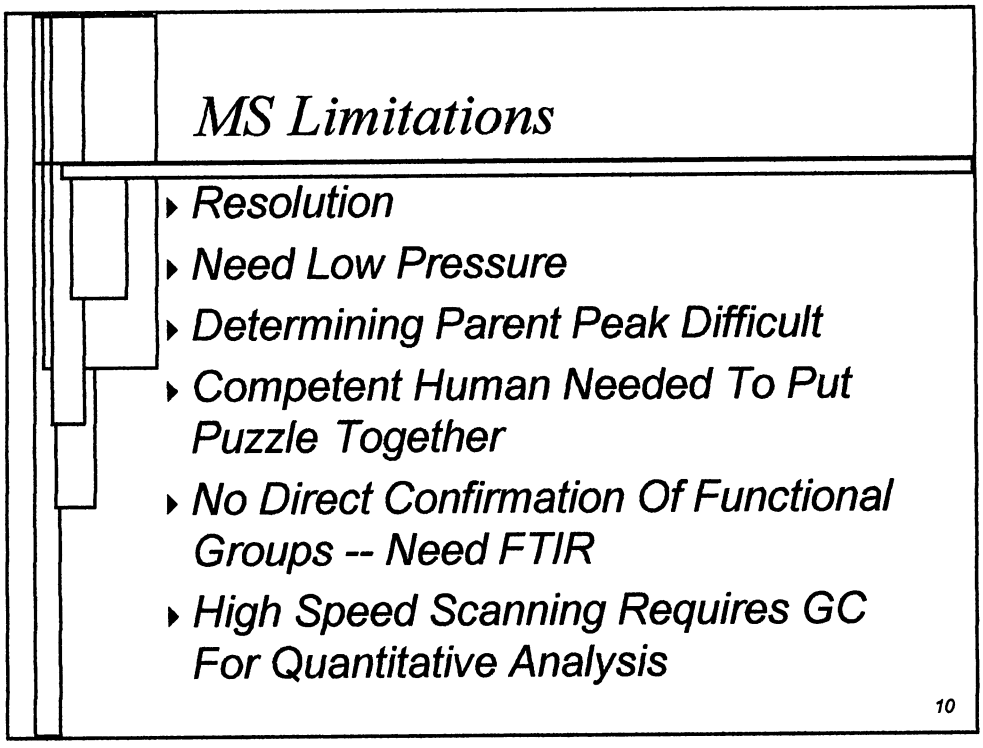
Put transparency of text diagram of MS device after this slide.

After that transparency, show transparency of butanol mass spectrum.



Refer to puzzle analogy.

Parent Peak hard to determine usually.

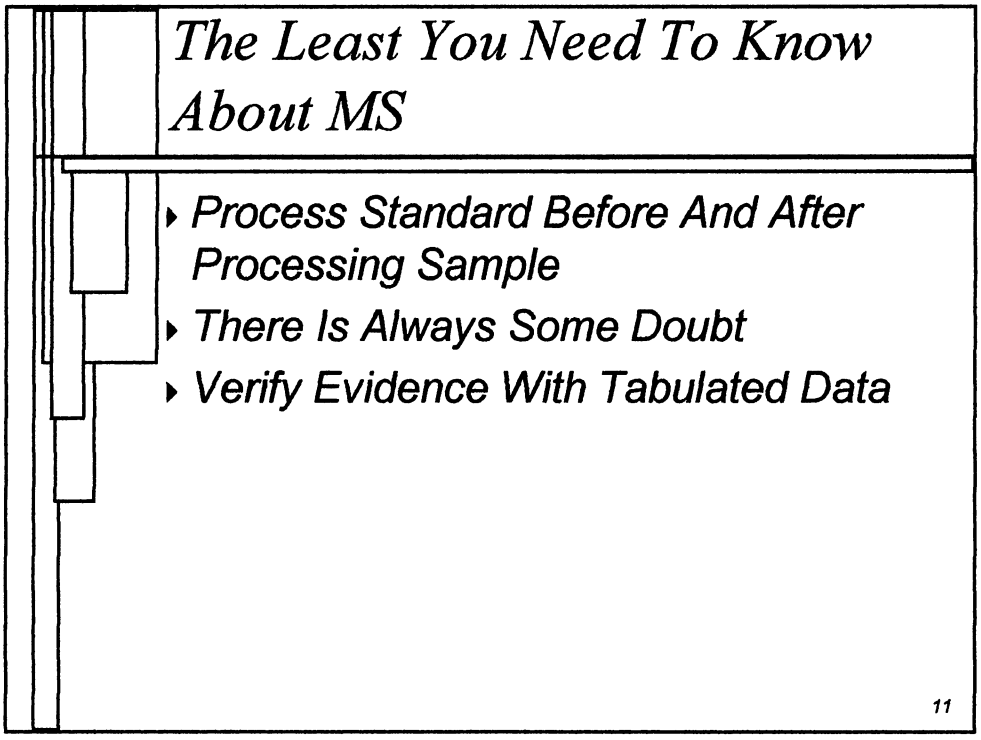


Resolution -- high masses need high resolutions

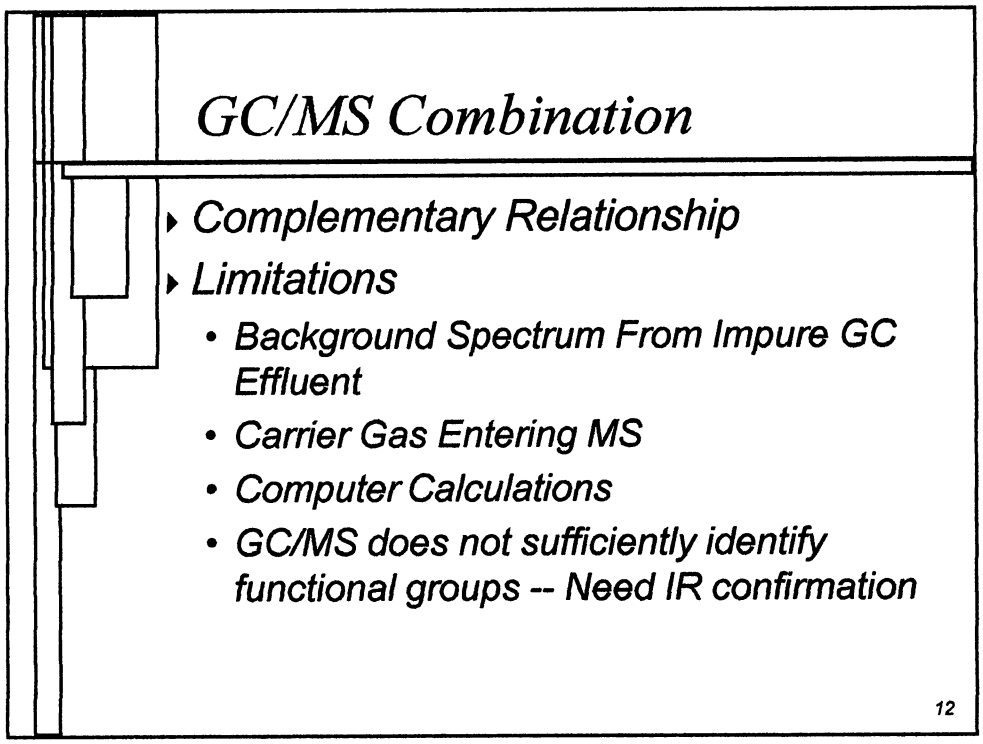
Pressure -- Keep pressure low to prevent polymerization

Computer can't do job by itself, yet.

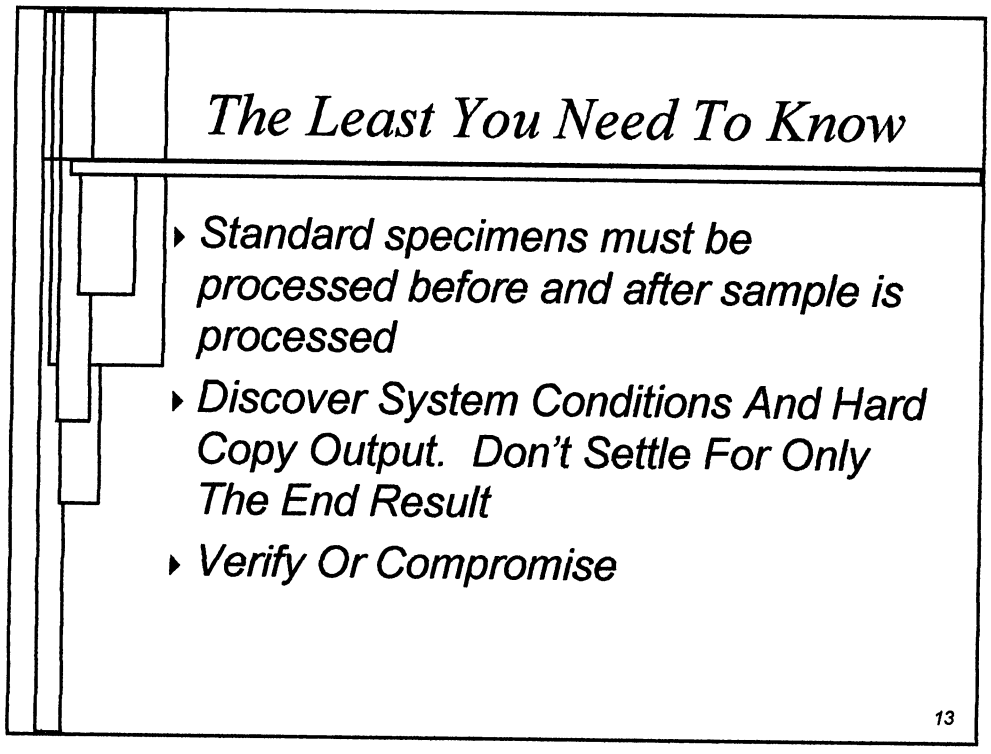
High speed scanning --> lower resolution, not a problem with quadrapole MS



Note that these caveats are similare to caveats for GC



Problems with GC will probably cause problems with MS



Mention Arson-Murder Case