

ASSIGNMENT #5. – Generation and Screening of Alternatives.

Group Assignment

100 Supplemental Project POINTS = DUE -- MONDAY SEPT. 8, 2008

- Read Chapter 4 Flowsheet Synthesis and Development pages 125 → 150
- Read Chapter 11 References to Literature pages 476 → 467

Process Synthesis As in previous Project Problems you should work in groups of up to three. Choose your own groups.

Project Problem #5.

Describe and briefly discuss at least two or more different routes for the production of **Glycerin**. Write the equations for the chemical reactions involved, calculate the raw-material costs per pound of product for each route, and compare with current published price for **Glycerin**. Show the last 27½ year history of the price of bulk technical grade **Glycerin** and how it has fluctuated (2 years of monthly prices per student in the class [see date assigned list], submit *Excel* spreadsheet of your years worth of data).

- ◇ Communicate your results in a summary that presents the reaction routes, compares the costs, and recommends the best route; present your supporting calculations in an appendix. Reference all your sources of information, bibliography must be in correct and complete format (including edition, date, page numbers, etc.) - see P&T Ch. 11, pages 476-7 and the ChE 433 textbook (pages 14-15 & Appendix I).

Chemical Marketing Reporter is a source of price data.

Useful **Process Technology References** :

[UI Library - Ref call No.]

Austin, Shreve's Chemical Process Industries, latest edition

earlier ed. ⇒ Shreve, Brink, & Austin, Chemical Process Industries

Kent, J.A., Riegel's Handbook of Industrial Chemistry, 7th Ed (1974)

Kirk & Othmer, Encyclopedia of Chemical Technology, (1979) [TP9 .E698]

McKetta, Encyclopedia of Chemical Processing and Design, (1980) [TP9 .E66]

⇒ work in progress, 49 volumes (Saf-Sep) to date

Lowenheim & Moran, Faith, Keyes and Clarks, Industrial Chemicals, (1975)

Stephenson, Introduction to the Chemical Process Industries, (1966)

Academic Press Dictionary of Science and Technology, (date?) [Q123 .A33]

Gardner's Chemical Synonyms and Trade Names, (date?) [TP9 .G286]

⇒ include generic & trade names, tells what it is, what it does, who manufactures

McGraw-Hill Dictionary of Scientific & Technical Terms, (date?) [Q123 .M34]

McGraw-Hill Encyclopedia of Science & Technology, (date?) [Q121 .M3]

⇒ revised ~ every 5 years, latest edition on Reference, older editions in general circulation

Ulliman's Encyclopedia of Industrial Chemistry, (date?) [TP9 .U57]

⇒ work in progress, 36 volumes projected

An Introduction to U.S. Patent Searching: The Process, (date?) [*Patent Reference* T210 .A73]

⇒ kept on shelves in the patent information area of first floor.

ASSIGNMENT #5 *continued* – **Generation and Screening of Alternatives.**
Individual Price History Assignment
Excel spreadsheet submitted to web = DUE -- MONDAY SEPT. 8, 2008

- 2006-8 → Weakley 1996-7 → Stafford 1986-7 → Sorge
- 2004-5 → Sobczyk 1994-5 → Smith 1984-5 → Prizer
- 2002-3 → Penberthy 1992-3 → Nonthabenjawan 1982-3 → Muntifering
- 2000-1 → Mansour 1990-1 → Kooda 1980-1 → Kane
- 1998-9 → Elgan 1988-9 → Bassler

Submit your literature data in a **vertical column Excel** spreadsheet. One column containing the date and adjacent column containing the price on that date. The data in each of your spreadsheets will be combined into a single spreadsheet so that a historical plot of the price history can be created. Be sure to correctly cite the source of your price data.

If you use the previously listed references that have (date?) in the group process routes report, be sure to include the correct publishing date for the edition you used.

Chemical Marketing Reporter is a source of price data.