Quality:
A Brief History

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What is Quality Control?

• ISO – International Organization for Standardization
• Quality Control (QC) – “…focused on fulfilling requirements.”

Ex. Inspections & Testing of Products
How old is quality control?

• It is hard to say…
  Quality control is everywhere and in our nature.

• Natural Selection - If you believe in this, it is a great example of quality control.
Historical Examples of Quality Control

- Flints used to carve alder or limewood Dugout Canoes (~3500 B.C. in Denmark)²

The excavation of a mine revealed a **discarded parts** pile.
Historical Examples of Quality Control, continued

• Cubit – First measurement of length.

• The Royal Egyptian Cubit was to be calibrated against a precision standard (Royal Cubit Master) at regular intervals. “Failure to do so was punishable by death.”

![Common cubit](image)

![Royal cubit](image)
Components of Quality Management

• Quality Control –

• Quality Assurance (QA) – “…focused on providing confidence that quality requirements will be fulfilled.”

Code of Hammurabi (3000 B.C. in Babylonia)
“The mason who builds a house which falls down and kills the inmate shall be put to death.”
Components of Quality Management cont.

- **Quality Planning** – “…focused on setting quality objectives and specifying necessary operational processes and related resources to achieve the quality objectives.”¹

- **Quality Improvement** – “…focused on increasing the ability to fulfill quality requirements.”¹ Kaizen, Six Sigma, Lean Manufacturing, etc.

- 3500BC → 21st Century
- Quality Control → Quality Management

¹ Source: [1]
# Quality Related Historical Events

### Life Changing Events

- **1775-1783** American Revolution
- **1914-1918** World War I
- **1939-1945** World War II
- **1945** 1st Atomic Bomb (Trial and Warfare)
- **1979** Three Mile Island
- **1986** Chernobyl
- **2011** Fukushima Daiichi

### Measurements and Standards

- **1783** US Customary Units (after revolution)
- **1789** United States Constitution
- **1790** Jefferson Report
- **1781-1789** Articles of the Confederation
- **1901** National Bureau of Standards
- **1960** International System / Metric (SI Units)
- **1790** Office of Standard Weights and Measures
- **1976** US Customary Units (after revolution)
- **1930s** Statistical QC (SQC – Control Charts)

### Quality

- **1937** ISO Founded
- **1947** Total Quality Control
- **1968** Japanese (Companywide QC)
- **1987** ISO QM Standard
- **1994** ISO 9001:1994
- **2000** ISO 9001:2000
- **2008** ISO 9001:2008
- **2015** ISO 9001:2015

### Eichrom Technologies

- **1976** NPO Founded
- **1981** NPO NIOSH Certified
- **1990** Eichrom Founded
- **1995** Eichrom ISO Certified
- **2008** NPO Acquired by Eichrom
- **2010** NPO ISO Certified

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20th Anniversary!
• Is it really worth doing if you don’t write it down?

• How to manage all of the data?

  – 20th Century – Manufacturing Industry / Quality Advancements
  – 21st Century – Electronic Industry
Quality Management Software

- **Quality Collaboration by Design (QCBD -- Access database)**
  - Customer Comment
  - Corrective and Preventive Action
  - Equipment Management
  - Master List and Change Management
  - Nonconformance Control
  - Process Deviation
  - Vendor Management
  - Training Management
Why?

• Eichrom’s commitment to the radiochemistry community to provide analytical separation products that the world can count on.

  – “Do it right the first time”

  – “Do it today, not tomorrow”

Mike Fern, President of Eichrom
Works Cited


