PerkinElmer
For the Better

HUMAN HEALTH | ENVIRONMENTAL HEALTH

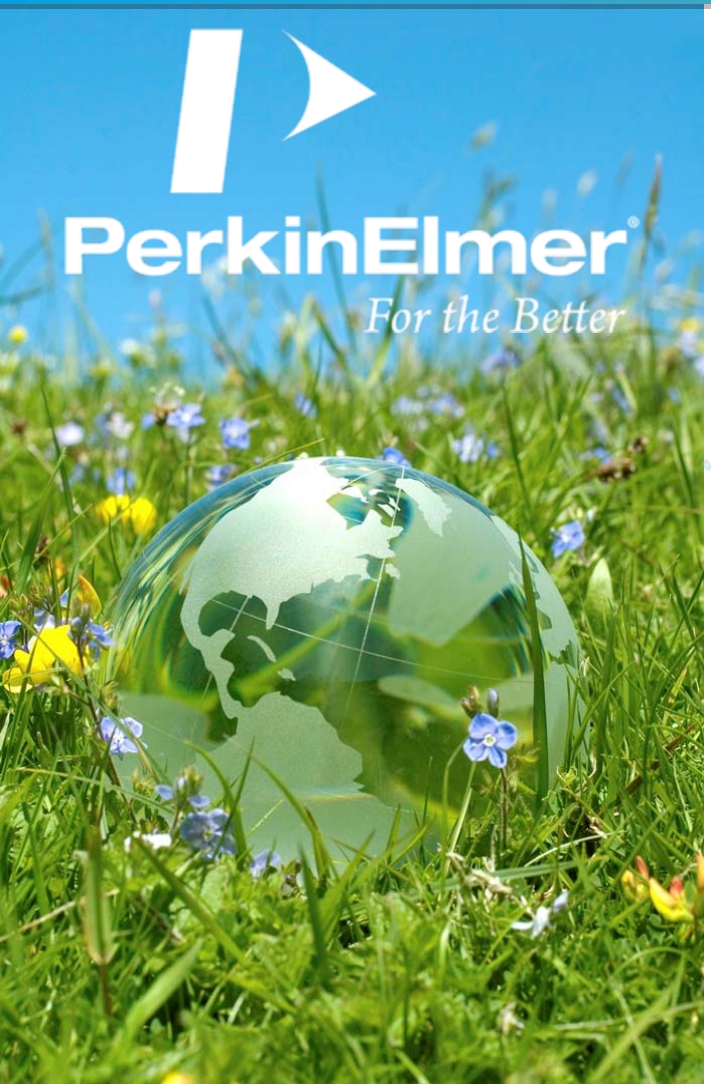
Toxic Use Reduction through Alternative Processes

PerkinElmer Salem

Nov 3, 2010

Enabling the prevention and detection …

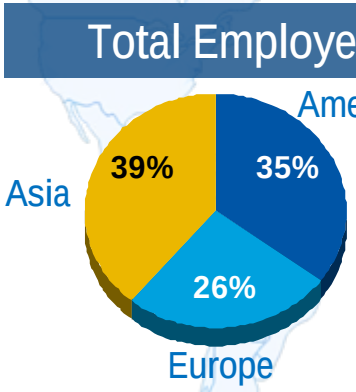
HUMAN HEALTH | ENVIRONMENTAL HEALTH

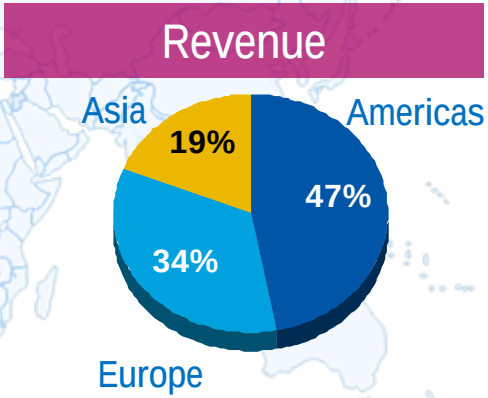


$1.8B in Revenue

8,500 employees

Operations in 150 Countries



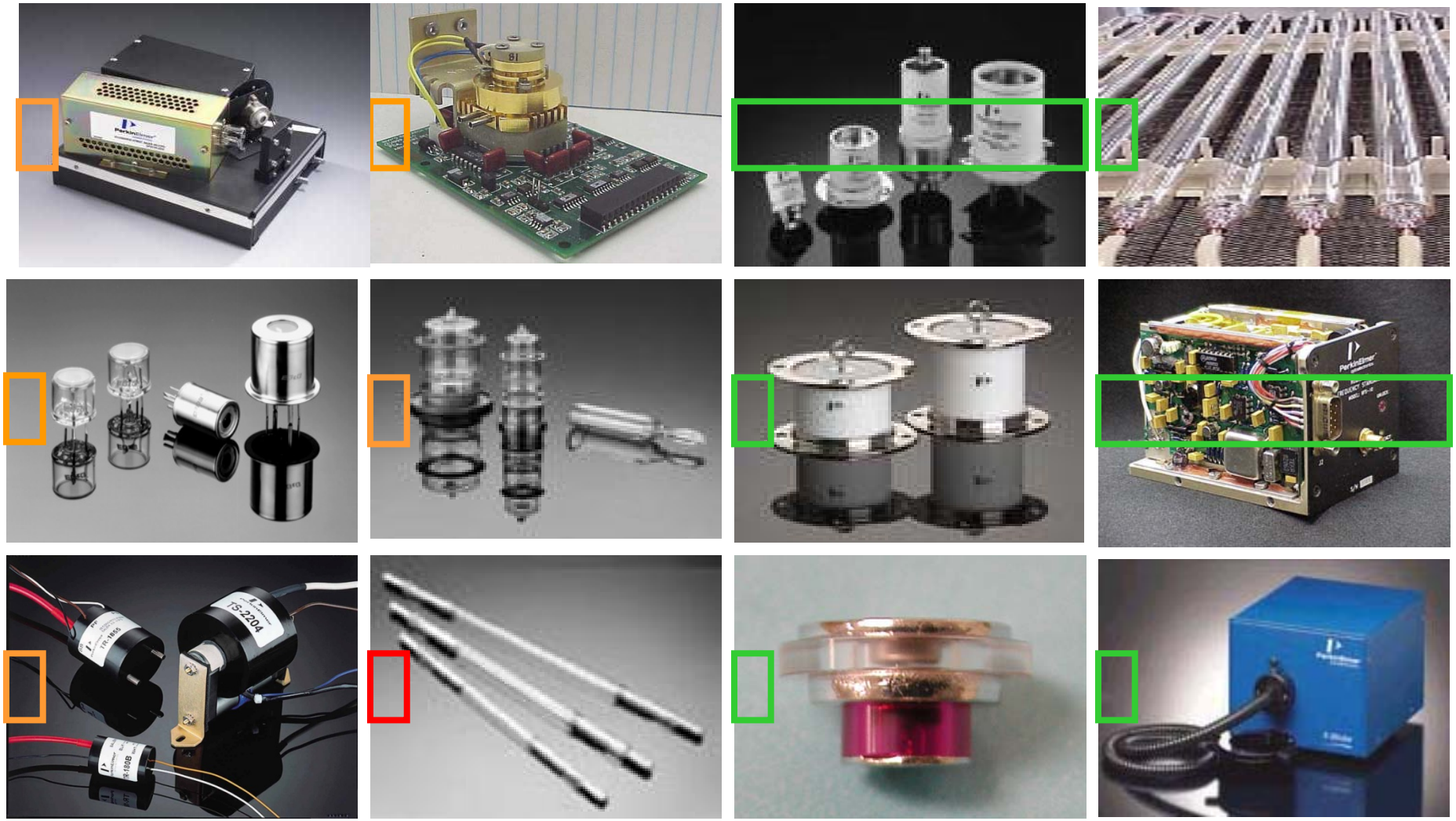


… of disease and harmful contaminants

Salem site summary

- Originally known as EG&G
- Facility established in 1961
- 1999 changed name to PerkinElmer
- Facility approx. 112,000 ft^2
- 160 Employees
  - Operations, Design Engineering
  - Sales/Marketing and Product Mgmt
  - Finance, HR, IT
- Certifications
  - ISO 14001:2004
  - ISO 9001:2008
  - OHSAS 18001:2007
- EPA Green Power Partner
- Energy Demand Response Participant

Diverse portfolio of 12 product lines

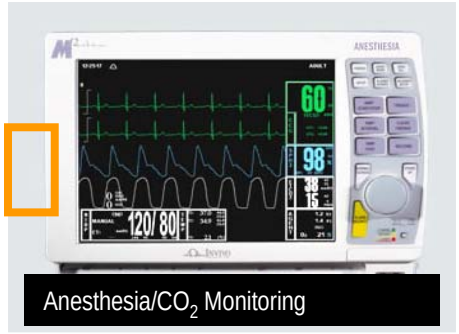


Biotech
Mil/Aero
Industrial Flash

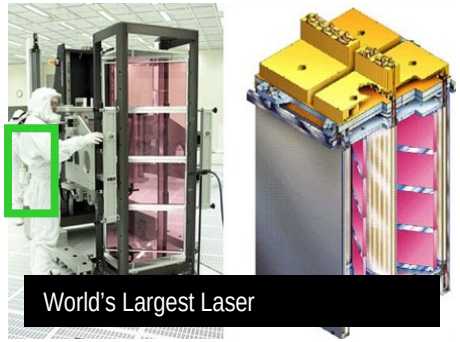
… all with different business needs and solutions

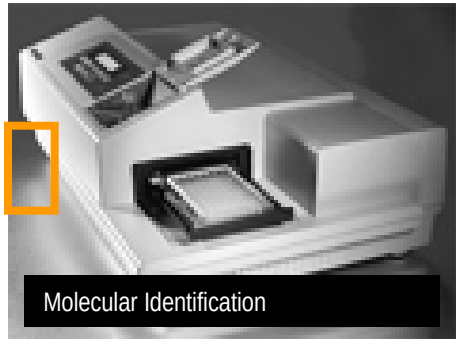
Each product supports various applications …


Clinical Diagnostics


Anesthesia/CO_2 Monitoring

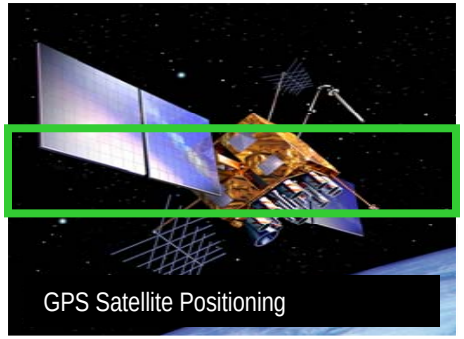
Laser Vision Correction


World's Largest Laser


Molecular Identification


Industrial Gas Detection


Rocket Stage Separation


GPS Satellite Positioning


Power Grid Protection


Laser Designation/Targeting


Weapon Detonation


Hi-Speed On-line Inspection

Biotech
Mil/Aero
Industrial Flash

… biomedical, medical, industrial, research, and

Toxic use reduction effort – hazardous materials

- Six sigma principles used to consolidate and streamline chemical processing
  - Define – goals and scope of the project – reduce by 50% hazardous materials used in production
  - Measure – measure performance and generate a list of chemical usage involving current processes
  - Analyze – current performance in terms of future requirements
  - Improve - reduce hazardous material in processes while maintaining or improving upon process results
  - Control - implement improvements and monitor to maintain effectiveness
- Identified the chemical laboratories as point of hazardous materials consumption and waste generation
- 4 chem. labs were operational at time of project implementation
  - Redundant operations and processes
  - Solvent reuse programs implemented

Toxic use reduction effort – hazardous materials

- Consolidated 4 chemical laboratories into 1.25 lab areas
  - Reduced the footprint by 6000 sq. ft.
  - Centralized chemical processing and storage

- Hazardous chemicals frequently used in the operation
  - Etchants
  - Freon
  - Hydrochloric acid
  - Hydrofluoric acid
  - Nitric Acid
  - Sulfuric acid
  - Trichloroethylene
  - Trichloroethane

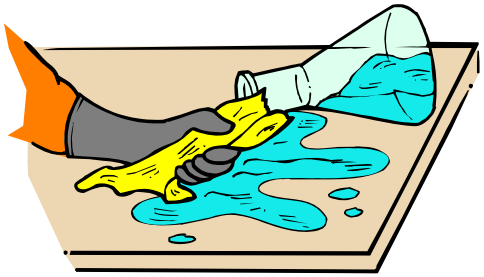
- Processes in which the above chemicals were used produced dangerous conditions
  - Chemical spills were a regular occurrence
  - Injuries occurred frequently

Toxic use reduction effort – primary applications

- Primary applications for chemical based systems
  - Heavy duty cleaning of parts
  - Vapor degreasing of piece parts
  - Etching of materials
  - Caustic cleaning
  - General cleaning
- Identified a potentially safer alternative to solvent and acid based systems
  - Citrus based cleaning system
- Evaluated cleaning system and determined it was acceptable for use
- Implemented alternative cleaning method

Citrus based cleaning process benefits

- The safety benefits
  - Involves no petroleum solvent use
  - Involves no butyl solvent use
  - No harsh alkalies or acids
  - Non-flammable water solutions
  - Reduces the toxicity and health hazards associated with solvents



- Significantly reduced
  - Floorspace footprint
  - Complexity of the operation
  - Required natural and employee resources
  - Material and disposal costs

- Disposal
  - 100% biodegradable
  - Nearly neutral

Chemical lab pre citrus based process implementation

Benchtop citrus based cleaning process

Summary of results

- Applied Six Sigma principles used to consolidate and streamline chemical processing
- Citrus based system allowed for increased throughput
  - Elimination of process steps
  - Fewer resources required
  - Increased efficiency
  - Improved productivity
  - Lowered risk hazards
- Unexpected benefit
  - Product quality improvement
- Improved cost savings
  - Raw chemicals
  - Disposal
  - Overhead (floorspace, salaries, utilities)
  - Scale of economies
- Site reduced emission status from major to 25% facility emissions cap