CALIFORNIA CODES AND STANDARDS FOR 2006

Presented by:

Reinhard Hanselka

Jeff Tarter

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INTERNATIONAL CODE COUNCIL

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CODE ADOPTION WORK PLAN

- **State Fire Marshal – Rueben Grijalva**
  - Core Group
    - Work Groups
      - Southern California
      - Northern California

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CORE GROUPS

- This group is composed of designated individuals and alternates from the core stakeholders to this code process. The organizations represented on this group have no economic interest in this effort. The Core Group will provide overall direction to the Work Groups, meet routinely with Work Group Leaders, and work under the SFM policy direction.
  - California Building Officials
  - Fire Prevention Officer's Section, Cal Chief's
  - California Fire Chief's
  - Association League of California Cities
  - California Metropolitan Fire Chiefs
  - California State Association of Counties
  - Fire District Association of California
  - Office of Statewide Health Planning and Development
  - Division of the State Architect
  - Housing and Community Development

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WORK GROUPS

- There are 14 Working Groups divided by code subject matter. Each Work Group will have two Group leaders. One Group Leader representing Building Officials the other representing Fire Officials. The Group Leaders will be responsible for maintaining the contact list, task tracking, and scheduling meetings, and preparing 'Action' minutes
  - A
  - I-3
  - B
  - M
  - R-1,2,3,6
  - E-1,2,3,4
  - S
  - F
  - U
  - H
  - I-1, R-4
  - I-2
  - Special Occupancies

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H-OCCUPANCY DEVELOPMENT

- **Southern California**
  - H-1
  - H-2
  - H-3
- **Northern California**
  - H-4
  - H-5
  - H-8

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H-OCCUPANCIES

- **H-1** Explosives, Oxy 4 etc.
- **H-2** Flammables (use)
- **H-3** Flammable (storage), Oxy.
- **H-4** Toxics, H-Toxics, Corrosives
- **H-5** Semiconductor
- **H-8** Lab Chemicals

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CODE ADOPTION TIME LINE

- **Oct 1, 2005** – First draft of B Occupancy Work Group recommendations
- **Nov 1, 2005** – Draft of Work Group full recommendations
- **Dec 1, 2005** – Draft Work Group recommendations completed
- **Jan 1, 2006** – Final Work Group recommendations to Core Committee
- **Feb 1, 2006** - Final Code Packet recommendations due to SFM
- **March 2006** – Review by SFM Fire & Life Safety Building Standards Advisory Board
- **April 2006** – Review by State Board of Fire Services
- **May 2006** – SFM Submittal to BSC
- **July 2007** – Adopted by State
- **January 2008** - Enforcement

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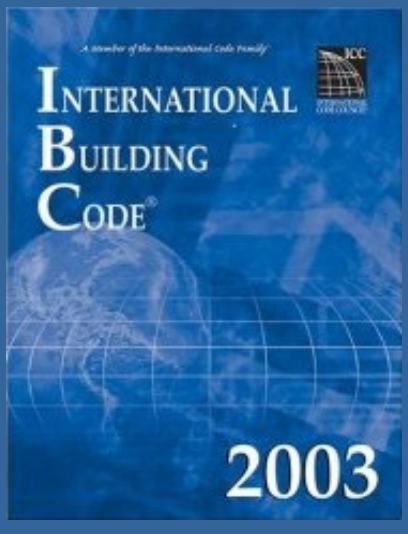
INTERNATIONAL BUILDING CODE



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IBC CHAPTER 3

- **Use & Occupancy Classification**
  - IBC Control Area Concept
    - Allows multiple control areas per floor
    - Maximum allowable quantities per floor based on % of base amount
    - Floor construction of the control area and construction supporting the floor of the control area shall have a minimum 2-hour fire resistive construction.

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MAXIMUM ALLOWABLE QUANTITIES

- **Changes in "Maximum Allowable Quantities", i.e. base exempt amounts for:**
  - Combustible Liquids
  - Flammable Gases
  - Flammable Liquids
  - Flammable Solids
  - Organic Peroxides
  - Health Hazard Materials

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MAXIMUM ALLOWABLE QUANTITITES FOR FLAMMABLE LIQUIDS

- **Maximum allowable quantities for Class 1B and 1C flammable liquids combined.**
  - Storage = 120 gallons**
  - Use-Closed – 120 gallons*
  - Use-Open = 30 gallons *
- **Effectively doubles current exempt amount for Class 1B flammable liquids**

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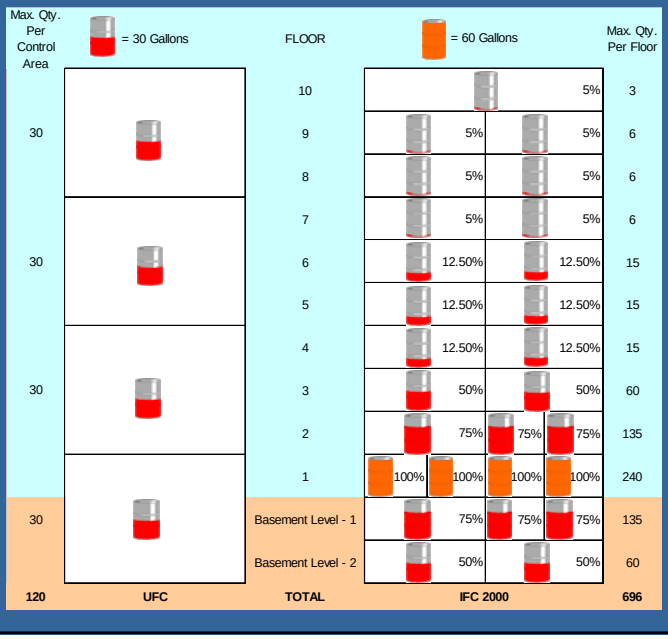
FL-1B USE OPEN



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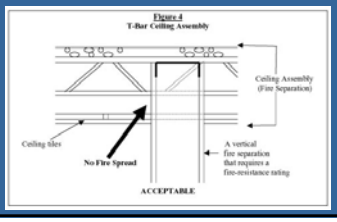
IBC 302.1.1.1

- **Occupancy Separation**
  - Required per Table 302.3.3
  - Partition shall extend from the floor to the underside of the:
    - floor/ceiling assembly
    - roof/ceiling assembly
    - floor or roof deck above.



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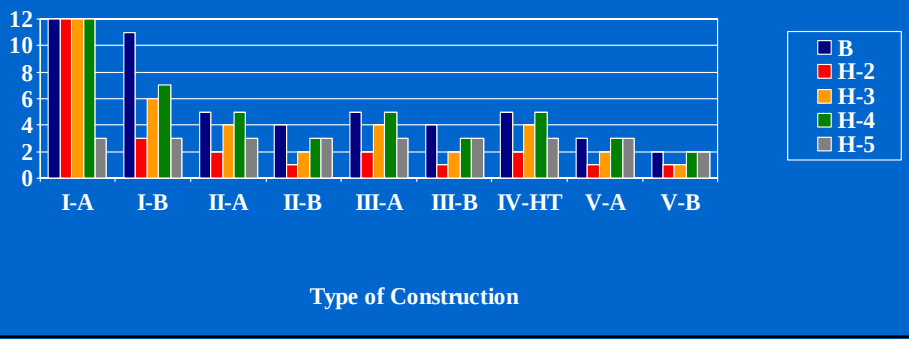
IBC CHAPTER 5

- **General Building Heights and Areas**
  - Table 503 – Maximum Stories



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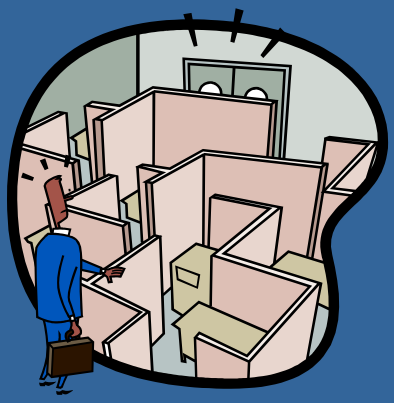
IBC CHAPTER 10

- **Means of Egress**
  - Cross reference IFC Chapter 10



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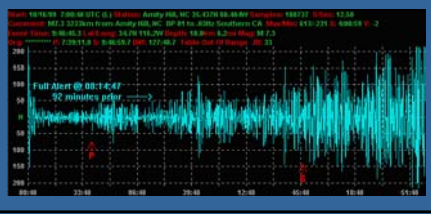
IBC CHAPTER 16

- **Structural Design**
  - Table 1604.5 Occupancy Importance Factor
    - 1.25 – Structures containing toxic or explosives in quantities "sufficient to be dangerous to the public if released.
    - 1.50 - Structures containing highly-toxic materials where the quantity exceeds the "exempt amount".



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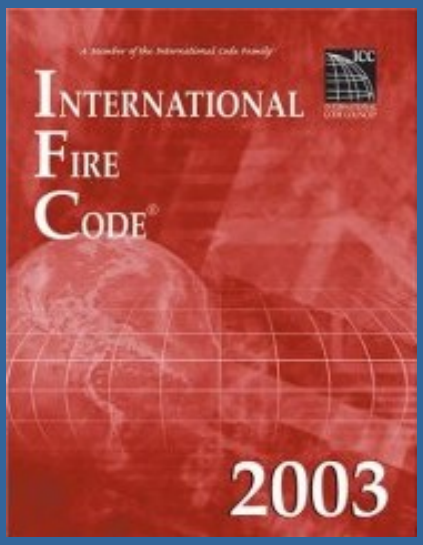
INTERNATIONAL FIRE CODE



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IFC CHAPTER 2

- **Definitions**
  - Exhausted Enclosures
    - Laboratory Fume Hoods specifically included in definition of exhausted enclosures.

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FUME HOODS SPRINKLERS

- **Laboratory fume hoods where flammable materials are dispensed shall be protected by an automatic fire-extinguishing system.**
- **NFPA 45-6.10 Exception 2**

  "If a hazard assessment shows that an automatic extinguishing system is required, then the applicable system shall be provided."
- **S.C. County local Fire Code amendments requires fire protection for all workstations containing hazardous materials.**

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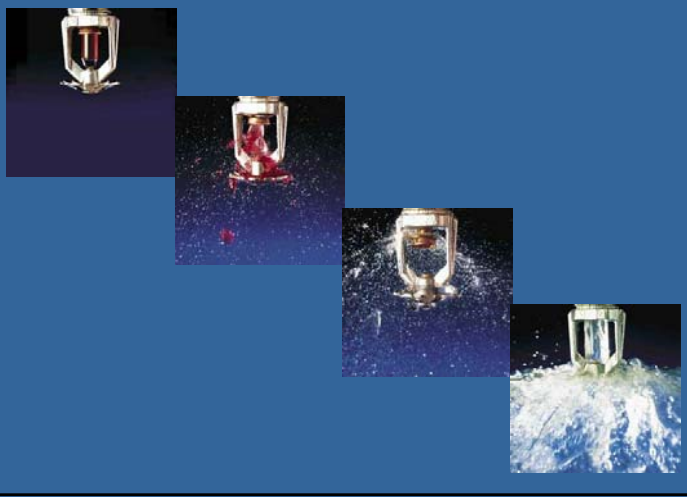
IFC CHAPTER 9

- **Fire Protection Systems**



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IFC CHAPTER 10

- **Means of Egress**
  - Cross reference IFC Chapter 10

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IFC CHAPTER 14

- **Fire Safety During Construction and Demolition**

San Jose Mercury News

A fire broke out Monday afternoon, August 19, at Santana Row, a $750,000,000 retail and residential complex under construction in west San Jose…

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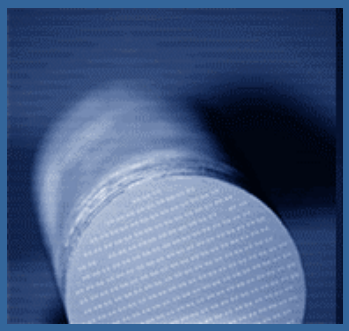
IFC CHAPTER 18

- **Semiconductor Fabrication Facilities**



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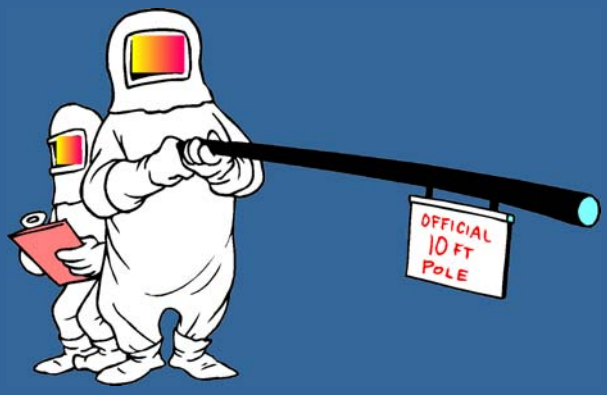
IFC CHAPTER 27

- **Hazardous Materials**



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IFC CHAPTER 30

- **Compressed Gases**

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IFC CHAPTER 31

- **Corrosive Materials**

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IFC CHAPTER 32

- **Cryogenic Fluids**
  - Foundation & Support
  - Temperature Effects
  - Pressure Relief Devices
    - Accessibility
    - Shutoffs
  - ANSI A13.1

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IFC 3203.2

- **Pressure Relief Devices**

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TRAGECTORY

Cylinder exploded at 12:40 PM while transport vehicle was parked on busy Interstate highway

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IFC CHAPTER 34

- **Flammable and Combustible Liquids**
  - Flammable liquid storage cabinets
    - Provide approved flammable liquid cabinet for all class I, II, and III-A liquids over 10 gals
    - Cabinets must be self closing and self latching

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IFC CHAPTER 35 & 36

- **Chapter 35 – Flammable Gases**
- **Chapter 36 – Flammable Solids**

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IFC CHAPTER 37

- **Highly-Toxic & Toxic Materials**
  - 3703 Highly Toxic and Toxic Solids & Liquids
  - 3704 Highly Toxic and Toxic Compressed Gases

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IFC CHAPTER 39 & 40

- Chapter 39 – Organic Peroxides
- Chapter 36 – Oxidizers

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IFC CHAPTERS 41, 43 & 44

- Chapter 41 – Pyrophoric Materials
- Chapter 43 – Unstable (Reactives)
- Chapter 44 – Water Reactives

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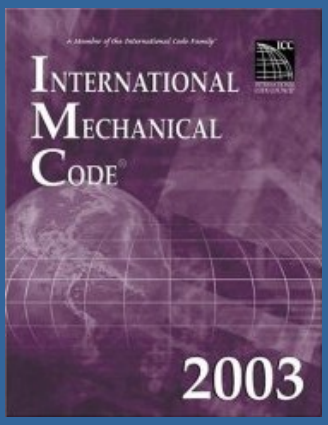
2003 MECHANICAL CODE



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UMC - CHAPTER 4

- **Ventilation**
  - Key mitigation factor for almost all hazardous conditions
  - Capture Velocity
    - Per Vapor Pressure
  - Consistent with ACGIH

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LABORATORY VENTILATION

Example of Flow in a Laboratory Modelled Using Large Eddy Simulation (LES) Techniques

This animation permits one to assess the dispersion of a heavy gas around a lab for three alternate ventilation configurations:

- 20 ACH (2200 cfm) w/high scavenging exhaust (450 cfm) at the ceiling
- 10 ACH (1100 cfm) w/high scavenging exhaust (125 cfm) at the ceiling
- 20 ACH (2200 cfm) w/low scavenging exhaust (450 cfm) at floor level

Property of Rowan Williams Davies & Irwin Inc.

Heavy Gas Spill Event
Laboratory Ventilation Assessment - 3 Ventilation Configurations

For Demonstration Purposes Only

RWDI

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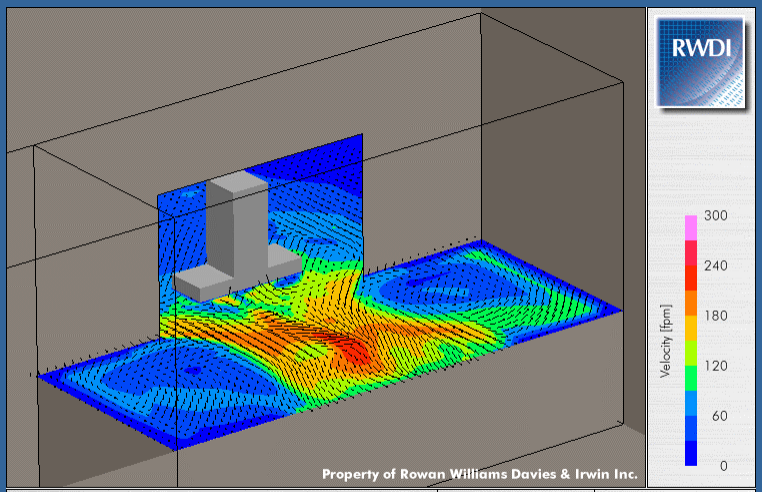
FUME HOOD VENTILATION



Velocity [fpm] and Direction
Flow in Front of a Technician Near a Fume Hood

For Demonstration Purposes Only

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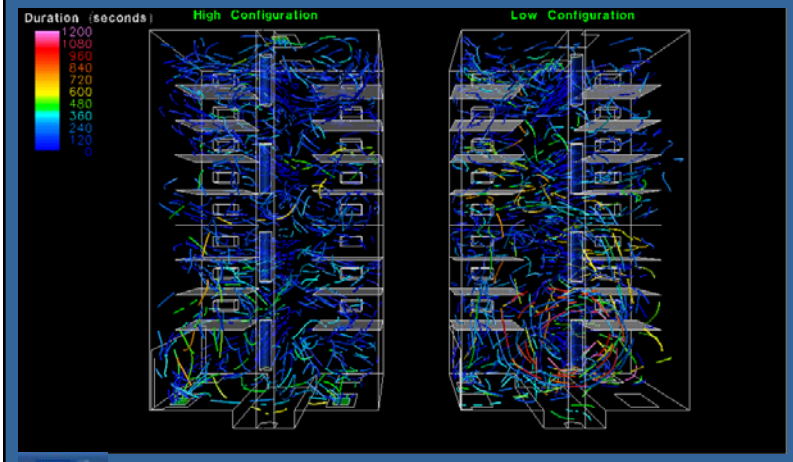
VIVARIUM VENTILATION



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RWDI CONSULTING ENGINEERS

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UMC - CHAPTER 11

- **Refrigeration**
  - Safety Classification
  - Purity
  - New, Recovered & Reclaimed
  - Emergency Ventilation Control
    - Discharge @1/2 IDLH
  - NH_3

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UMC - CHAPTER 11

- **High Probability**
- **Low Probability**
- **Machinery Room – Hazardous Occupancy per IBC**
- **Monitoring**

UMC - CHAPTER 12

- **Hydronics**
  - Steam & Water
  - Material
  - Fabrication
  - Testing
    - >100 psi or >50 psi over operating pressure

Summary of Trends in Refrigeration

- Increasing Enviromental Pressures due to Green House effect and Ozone Depletion
- Increasing Awareness of Secondary Cooling Loops
- Ban on CFC‘s
- Increasing use of Natural Refrigerants
- Indirect / Secondary Cooling Systems

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Wal-Mart in Aurora CO

Wal-Mart Experimental store: Secondary Cooling- ABS with Armaflex for Medium Temp glycol Loop.

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Wal-Mart – Green Store

BUSINESS LOS ANGELES TIMES

Wal-Mart to Open 'Green' Store

Environmentally friendly features will be used in an experiment in resource and energy conservation.

By Roger Vincent
Times Staff Writer

Retail giant Wal-Mart Stores Inc. will open a prototype supersstore in Texas today that relies heavily on "green" technology as an experiment in resource and energy conservation.

The project in the Dallas suburb of McKinney uses environmentally friendly features such as electricity-generating photovoltaic cells in the skylights. The store will collect rainwater from the roof and parking lot to tend the landscaping year-round.

Wal-Mart will open a second green store in Aurora, Colo., in October as part of a three-year test. Results from the experiments will be measured by independent auditors from Oak Ridge National Laboratory and Natural Renewal Energy Laboratory, who will make their findings public, said Don Moseley, head of experimental projects for Wal-Mart.

"A number of other big-box retailers are looking at this," said Rick Fedrizzi, president of the nonprofit U.S. Green Building Council. "The No. 1 rule in retail is to get people in and have them hang around for a while. In green spaces you have a sense of well-being."

In charge of design of the two Wal-Mart stores is LPA, an Irvine architecture firm specializing in green projects. LPA also designed an $85-million green office building in Torrance for Toyota Motor Corp. two years ago.

The retailer will incorporate the most successful features into future Wal-Mart stores. The energy-efficient light emitting diode, or LED, lighting found in the Texas store will be used in other locations, Moseley said.

His favorite experiment is the radiant floor heating installed in some areas including the sometimes chilly maintenance pits in the garage where mechanics service customers' cars. Tubes below the concrete floor can fill with water heated by burning waste oil from the garage and cooking oil from the store's food service operations.

Other experiments include heat generated by refrigeration equipment being captured and used to heat the water in restroom sinks, said LPA President Dan Heinfeld. Fabric ducts slung 11 feet high will evenly distribute cool air in a manner expected to save enough electricity to power 70 homes. Condensation from air conditioners will be collected for plant irrigation.

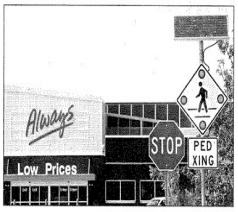
Wal-Mart won't say how much the new stores cost to build, though the various experimental design elements did raise the price of the Texas store, Mr. Moseley acknowledged.

Overall, the two green stores will get about 8% of their energy from solar and wind power. Those technologies will save about 300,000 kilowatts of electricity a year, the retailer said.

Wal-Mart's move into green development may be in part a effort to polish its image, said retail consultant Burt P. Flickinger. "Wal-Mart has a big black eye with American consumers for its wage and benefit level and aggressive expansion program, he said. "It could be an inspiring initiative, but it's too soon to tell."

In 2001 Wal-Mart agreed to pay a $1-million fine and establish a $4.5-million environmental-management program to settle federal charges that it violated Clean Water Act storm discharge rules at 17 sites in four states. Wal-Mart said the green stores weren't connected to the environmental settlements.

Wal-Mart shares closed Tuesday at $49.76, down 23 cents. *Bloomberg News was used in compiling this report.*



VERNON BRYANT *Dallas Morning News*

PROTOTYPE: *This Texas Wal-Mart uses such green technology as solar-powered crossing signs and radiant floor heating.*

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UMC - CHAPTER 14?

- **Process Piping**

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ASME BPE 20XX

- **Bio-Process Engineering (BPE)**
  - The ASME BPE Standard establishes criteria for design, materials, construction, inspection, and testing of vessels, piping, and related accessories such as pumps, valves, and fittings for use in the biopharmaceutical industry, including:
    - sterility and cleanability
    - dimensions and tolerances
    - surface finish requirements, and
    - Seals

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ASME A112.20.1 (2004)

- Qualification of installers for high-purity piping systems.

ASME

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AWS/DVS – B12.3

- Welding Standards - Plastics
- American and German Standard
- EU Standard

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CONCLUSION

- My conclusion is My beginning.
- A rational and balanced approach to safety issues based on Current Data.
- “The greatest barrier to learning the truth is to be convinced that you already know it.”

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