

# Greening the Boston Marathon

11.122 Final Project

December 4, 2001

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# Presentation Overview

- Facts about the Boston Marathon
- Identify environmental hazards associated with the resource usage of the event
- Discuss ways to shrink the race's environmental footprint
  - Organizers
  - Participants

# The Boston Marathon

- Founded in 1897 – 2<sup>nd</sup> oldest marathon in the U.S. (New York City)
- 15,000 Official Entrants
- 15,000 ‘Bandit’ Runners
- 7,000 Volunteers
- 1 Million spectators along the course
- 120 Million Household Viewers Worldwide

# Marathon Resource Usage

- Medical – 500 bags of ice, 500 tubes of petroleum jelly, 25000 aspirin tablets
- Food – 8000 pounds of pasta, 2000 quarts of tomato sauce, 25000 PowerBars
- Course – 1 Million paper cups, 35000 gallons of water, 3000 barricades
- So what can be done to ‘green’ the Boston Marathon?

# Hazard # 1: Runners' Bags

- 15,000 runners bags handed out at the expo
- Bags hold brochures and free products from race sponsors
- Bags are made of plastic

# Plastic and the Environment - I

- Plastic is a non-biodegradable product whose manufacture and incineration releases a chemical called dioxin
  - Carcinogenic: testicular and breast cancer, diabetes, reproductive disorders
  - Inextinguishable: chemical half-life (male) or exposure to infants (female)

# Plastic and the Environment - II

- Manufacture of plastic requires use of lead, mercury, and cadmium – carcinogenic
- Plastic interferes with drainage and disposal lines and systems
- Plastic hinders the functionality of animal and plant life
  - Cows
  - Trees
- In general, plastic disrupts the ‘flow’ of things

# Solution # 1: Get Rid of the Bags

- Offer the free goodies without the bag
- Most people will have carrying bags or else bags from purchases made at the expo
- Inconvenient, but manageable



## Hazard # 2: Water Stations

- 35,000 gallons of water used during the race
- Water is distributed among the 24 water stations along the course
- 97% of Earth's water is salt water – freshwater is in limited supply
- Much of freshwater currently used by irrigation and other processes
- Other methods of water production being explored, but use of freshwater itself dominates

## Solution #2: Cut Down Supply - I

- Reduce the number of water stations and space them out farther apart
- Approximately one water station per mile
- Runners' stomachs can empty only 6-7 oz. of fluid every 15 minutes
- Cups used are 6oz. cups

## Solution #2: Cut Down Supply - II

- Reducing the number of water stations will also produce these added benefits
  - Decrease in water consumption
  - Decrease in the number of paper cups used
  - Decrease clothing production

## Hazard #3: Running Shoes

- Many of today's running shoes contain polyvinyl chloride (PVC)
- PVC is leading plastic found in various construction materials e.g. pipes, floor tiles, home furnishings
- PVC also used in various shoes, including running shoes

# PVC and the Environment

- Production of PVC leads to release of dioxin – detrimental to both humans and the environment
- Disposal of PVC in landfills is susceptible to leaching – contaminate ground water
- Recycling of PVC not feasible due to various chemical additives found in it

## Solution #3: Buy 'Green' Shoes - I

- Support and buy shoes from companies that are trying to phase out PVC from its shoes
- Greenpeace Christmas 2001 Survey
  - Contacted various shoe manufacturers
  - Requested information on PVC phase-out plan
  - Evaluated these plans on A-F grading scale

## Solution #3: Buy 'Green' Shoes - II

- Top of the Class (Grade: A)
  - Adidas: PVC phase-out of in all products except for their high-performance sports equipment products by the end of 2002
  - Asics: all products will be PVC-free in 2002
  - Nike: PVC-footwear and non-silkscreen apparel available by end of 2002

## Solution #3: Buy 'Green' Shoes - III

- Thank God for P/F (Grade: C)
  - New Balance: Has eliminated some PVC; no commitment to PVC phase-out policy
- Are they in this class? (Grade: F)
  - Fila: Non-responder
  - Reebok: Non-responder
  - Saucony: Non-responder



## Hazard #4: Running Apparel

- Many runners, especially the economical and inexperienced runners, will wear a cotton T-shirt or long-sleeve shirt during the race
- Cotton in such a shirt or other apparel is most likely conventionally grown as opposed to being organically grown

# Cotton and the Environment

- Conventionally grown cotton is one of most heavily sprayed field crops in the world
  - 10% of world's pesticides
  - 25% of world's insecticides
- These chemicals will often drift in the air, ground, and water
  - Water and soil contamination
  - Health risk to humans and wildlife

## Solution #4: Wear Coolmax - I

- Coolmax is a specially designed substance created by Dupont consisting of Dacron polyester fibers
- Coolmax is found in high-performance running attire, such as shirts, pants, and socks
- Coolmax fibers transports perspiration away from the body to the surface of the garment, where it evaporates quickly

## Solution #4: Wear Coolmax - II

- Coolmax is not a “hazardous chemical” as regulated under the Occupational Safety and Health Act
- Coolmax contains none of the ozone-depleting substances listed in either Class I or Class II of the Clean Air Act Amendments of 1990
- Coolmax apparel more expensive, but more competition-friendly and environment-friendly

# Conclusion

- For an annual one-day event, the Boston Marathon can leave a pretty big ‘ecological footprint’
- Much of the negative impacts can be reduced or eliminated with a few small changes
- Traditional colors of Boston Marathon are blue and gold – making changes can add some ‘green’ as well