EOH3101 PRINCIPLES OF ENVIRONMENTAL HEALTH

Impact of the built environment on public health
Factors adversely affecting health of people are concentrated more on influences, such as poor diet and need for exercise.

Rarely considered are less traditional factors, such as:

- Housing characteristics
- Land-use pattern
- Transportation choices
- Architectural or urban-design decisions
For example: a 2-hour commute to work on America’s freeways is not a pleasant experience, and also an unhealthy experience.

Americans exercise less often and suffer higher levels of stress compared to the past.

http://www.transoptions.org/_media/commuters/commuters_--road_traffic_2.jpg
As people live farther away from cities, they inevitably will travel longer distance to work, shop and play.

For example: The Sierra Club says that an average American driver spend 443 hours each year driving, equivalent to 55 nine-hour days.

There is an increase in delay spent in an automobile from 1992 to 1996: Los Angeles 9 %; Atlanta 44 %; Orlando 62 % and Kansas City 81 % (percentage in annual person-hours)
The increase in time = increase in air pollution  
= increase in incidence of respiratory diseases

Cars and trucks are still a major source of air pollution because the number of cars and trucks and the number of miles people drive increases.

Congressional Research Service report—on-road vehicles account for:

- 58% of Carbon Monoxides (CO)
- 30% of Nitrogen Oxides (NO)
- 27% of Volatile Organic Compounds (VOCs)
- 9% of particulate matter (PM)

http://switchboard.nrdc.org/blogs/kbenfield/how_bus_rapid_transit_is_clean.html
The Third Ministerial Conference on Environment and Health (London, 1999) indicated the following:

- Motor vehicle traffic is the main source of ground-level urban concentrations of air pollutants with recognized hazardous properties.
- Approximately 36,000 to 129,000 adult deaths a year can be attributed to long term exposure to air pollution generated by traffic in European cities.
Substantial health benefits for people who participate in regular physical activity

Lower mortality rates for both older and younger adults

Lower risk of heart disease and stroke

Prevention or delay of the onset of high blood pressure and actual lowering of blood pressure among people with hypertension

Decreased risk for colon cancer

Lowered risk for noninsulin-dependent diabetes

Weight loss and redistribution of body fat; increase in muscle mass

Relief of the symptoms of depression and anxiety and improvement of mood

Enhancing psychological well-being and improving physical functioning among people with poor health
One of the more important determinants of physical activity – a person’s immediate environment (his neighborhood)

Environmental variables

- Presence/absence of sidewalks
- Heavy traffic
- Hills
- Street lights
- Unattended dogs
- Enjoyable scenery
- Frequent observations of others exercising
- High levels of crime
Positive environmental determinant of physical activity — enjoyable scenery

Greatest perceived barrier — lack of safe place to exercise

Other reasons for not exercising (research by CDC and others)— lack of structure or facilities, and fears about safety.

There is an association between higher levels of perceived neighborhood safety and higher levels of physical activity.

Thus — people are more likely to use parks / paths / bikeways when they are easy to get to and are safe and well maintained.
Why people tend to get less exercise?

1. Changes in lifestyles
   - Usage of cars to run almost every errand compared to using the bicycle or walking.

2. Urban design encourage sedentary living habits
   - Parking lots built as close as possible to final destinations
   - Contribute to poor health because significant factor in the incidence of overweight and obesity
   - Association between lack of physical activity and concomitant rises in obesity rates with major health care costs.
OTHER POTENTIAL HEALTH EFFECTS OF LAND-USE DECISIONS

Residents with surrounding greenspace had a stronger sense of community, better relationships, use less violent ways to solve conflicts with partners.

Urban health islands – increases demand for cooling energy, increases heat-related illnesses and deaths, and accelerate the formation of smog.

Risk of flooding

Residential development next to farmland – spill-over effects of agriculture such as excess noise, blowing dust and pesticide overspray.
IMPORTANT PUBLIC HEALTH CHALLENGES LINKED TO LAND-USED AND URBAN DESIGN ISSUES

Integrating physical activity into daily lives

Cleaning up and protecting the environment

Recognizing the contributions of mental health to overall health and well-being

Reducing the toll of violence in society
HOW TO ADDRESS THESE ISSUES?

1. Supporting research to determine the impact that changes in the built environment can have on public health.

2. Changing existing building codes to encourage building and site design that is accessible to people who has various degrees of mobility.

3. Encouraging greenspace development that promotes community, reduces violence and improves mental health.
EXTRA READING

1. Urban design and pedestrian and bicyclist safety
2. Environmental barriers for the Elderly and People with a Disability
3. The Impact of Uncontrolled Growth on Water Quality
Thank you for your attention!!!