A. Winter Maintenance Expenditures

1. Annually, ODOT makes large expenditures for materials used in snow and ice control

a. During an average winter season, the Department spends approximately $17 million on rock salt and an additional $1 million on other materials

b. When winters are harsh, such as that experienced during the 2002/2003 season, expenditures soar

c. During the 2002/2003 season, approximately $36 million was spent for rock salt, and nearly $2 million was spent for other materials

2. In addition to this direct cost, numerous indirect costs are associated with the use of winter maintenance materials

a. Their use can have an enormous impact on the environment and infrastructure (especially on the corrosion of reinforcing steel and exposed bridge members) and can result in extensive repair costs

b. Impacts are minimized with proper application and storage techniques

B. Winter Maintenance Materials

1. Available materials

a. Chemicals

i. Used in snow and ice control to

a) Prevent bonding of the ice and snow to the road surface

b) Prevent ice and frost from forming

c) Prevent the buildup of snow pack

d) Melt ice that has formed

ii. Available in both solid and liquid forms

b. Abrasives

i. Normally used for temporary traction and in conjunction with salt or other chemicals

c. The most commonly used winter maintenance materials

i. Abrasives (sand, grits)

ii. Salt (Sodium chloride) – rock salt

iii. Salt brine - 23% brine solution

iv. Calcium chloride (liquid or dry)

v. Magnesium chloride (liquid or dry)

vi. Agricultural by-products

2. Material selection

a. Numerous factors are considered within the selection process for determining which material(s) to use in snow and ice control

i. Material performance

ii. Use requirements

iii. Infrastructure impact

iv. Environmental impacts

v. Availability

vi. Cost

b. The variables within a storm event will dictate the material type and application rates best suited for the particular event

i. Through established guidelines and practices the selection process is narrowed to the best practice for the particular storm event

3. How chemicals work

a. Generally, all snow and ice removal chemicals work by lowering the freezing point of water and turning snow and ice into a liquid or semi-liquid slush

i. The function of lowering the freezing point of water is dependent upon the percent of chemical in solution

a) This means that dry chemicals do nothing until they take on moisture and go into solution or liquid form