

ment of D indicated that the data sets were not convergent and at least two data sets were dissimilar. This method aided in assessment of water quality status and trends for all six areas. Most of the data sets seem to converge on status of water quality for the six urban areas. Data sets seem to converge on trend data as well even where trends are not available.

Air quality - Good air quality is another basic environmental commodity, and essential to naturally functioning landscapes and meeting environmental laws. Air quality can have local effects on recreational opportunities, human health, visual aesthetics and economic development. Air quality problems generated within urban areas can also affect airsheds in other ecoregions.

Air quality was defined by existing state and federal air quality standards. The Oregon Department of Environmental Quality (DEQ) uses sub indices for an air pollution index that integrates various types of data to reflect the overall status of general air quality per region. The index and the data examined include carbon monoxide, sulfur dioxide, nitrogen oxides, lead, ozone, particulate matter, and hazardous air pollutants. Vehicle miles traveled and vehicle miles traveled on a per capita basis were also examined in relation to air pollution and, secondarily, to energy use.

Based on the last available data, air quality in Oregon's urban areas meets all currently mandated state and federal levels in terms of the criteria pollutants (particulates, ozone, carbon monoxide, etc.) but Hazardous Air Pollutants may be an area of rising concern.

EPA's recent inclusion of 188 Hazardous Air Pollutants (HAPS) in current air quality evaluations (1990 CAA Amendments) illustrates how new pollution categories can modify definitions of air quality. HAPS, assigned only when a pollutant matches or exceeds a minimum standard, occur in all of the six urban areas (see Table 3.10-2). Interpretations of current air quality status may change with the use of new stringent pollution standards (DEQ, 1999).

Current air quality conditions for the six urban areas are determined using number of exceedances of the current EPA ambient air quality standards and represented in Table 3.10-2. Based on the standards, the criteria pollutants established by DEQ and the EPA, and reports from the four datasets, current conditions range from excellent to poor to no data. In general carbon monoxide, ozone, and volatile organic carbon levels ranked poor to good for most of the urban areas while nitrogen oxides and lead levels ranked excellent with limited data collection. (Current conditions for volatile organic carbons could be regarded as incomplete due to the lack of data within the data sets examined). Total number of days that a pollutant exceeded the standards during 1988 to 1997

was highest in Portland with Eugene and Medford following close behind, respectively. Air pollution index descriptions for the six urban areas ranked Portland and Medford as moderate or unhealthy during 1994.

The data also show that for most of the six urban areas exceedance days for particulates (P10), carbon monoxide, and ozone declined over the years 1988 to 1997 and that most of the six urban areas are in attainment status or meet national ambient air quality standards (NAAQS, 1999) with regard to the criteria pollutants.

Soil and Groundwater Contamination - Healthy soil and groundwater are two more goods and services from a healthy ecosystem and essential to naturally functioning landscapes. Contamination of soil and groundwater is a significant health hazard to humans as well as aquatic and terrestrial ecosystems. It can also effect downstream ecoregions and watersheds through leaching and dispersion. The uncertainties involved in assessing underground leakage and contamination is increasingly in the public consciousness, which may lead to an increase in efforts to ensure soil and groundwater quality.

Indicators used for determining this measure were the presence of potentially harmful chemicals in the soil, leakage from underground storage facilities, and the hazardous chemical sites inventory list.

All six urban areas have leaking petroleum tanks and sites that are on the hazardous sites list. Current conditions for the six urban areas are summarized in Table 3.10-3. Portland contains the highest percentage of underground petroleum storage tanks that are currently leaking or that have leaked in the past (63%), followed by Eugene (17%), however Portland has the greatest percentage of cleanup completed (62%) followed by Medford (60%). Of the hazardous sites in the urban areas, approximately 20% are listed in DEQ's Voluntary Cleanup Program. Portland contains the highest percentage of hazardous sites (72%), followed by Eugene (15%), yet Eugene has a greater percentage of sites currently with enforcement action (36%) (see SOER Appendices on the Progress Board website: www.econ.state.or.us/opb).

Effects of urban areas on naturally functioning landscapes

Urbanization can have significant impacts on natural hydrology and hydraulics, geomorphic processes, water quality, habitat structure, native vegetation and aquatic ecosystems and watersheds. One of the most significant effects of urbanization is the conversion of native vegetation and natural landscapes to pavement and other impenetrable surfaces (driveways, sidewalks, parking lots, rooftops). Impervious surfaces prevent water from infiltrating into the soil and recharging groundwater, altering the hydrologic cycle. Urbanization can also eliminate or degrade native vegetation and riparian for-

Table 3.10-2. Summary of Oregon's urban air quality 1988-1997 based on Oregon DEQ and USEPA data. Air quality is based on data for ozone, particulates (total), particulates 10 um (PM10), carbon monoxide (CO), nitrogen oxides (NO2), sulfur oxides (SO2), volatile organic carbon (VOC), and lead. Vehicle miles travelled are based on 1998 data. Estimates of hazardous air pollutants (HAPs) are relative risk factors.

Table 3.10-2. Summary of Oregon's urban air quality 1988-1997 based on Oregon DEQ and USEPA data for ozone, particulates (total), particulates 10 um (PM10), carbon monoxide (CO), nitrogen oxides (NO2), sulfur oxides (SO2), volatile organic carbon (VOC) and lead. Vehicle miles travelled are based on 1998 data. Estimates of hazardous air pollutants (HAPs) are relative risk factors.

City	pollutant	DEQ to 1997	sites	USEPA AIRS 1997	sites	Comments	Sum of all days exceeding standards, 1993-1997		Vehicle miles travelled in 1998 millions	HAPs per capita risk factor		
							PM10	CO				
Portland	Ozone	excellent	6				0	0	2	2,215	4,357	350x
	CO			poor	9							
	Particulates			poor	9							
	PM10			fair	9							
	Volatiles			poor	9							
Eugene-Springfield	NO2	poor	5									
	SO2			poor	9							
	Ozone	excellent	6				0	0	0	331	2,561	200x
	CO	fair-good	4			CO only fair in Springfield						
	PM10	good	2									
Medford	Ozone	good					0	1	1	134	2,330	230x
	CO	poor	2									
	PM10	poor	4									
	Volatiles			poor	8							
	NO2			poor	8							
	SO2			good	8							
	Lead			fair	8							
	insufficient data						na	na	na	55	3,721	140x
Coos Bay	CO			poor	2		1	0	na	41	1,240	130x
	Particulates			poor	2							
	PM10	excellent	3			Sites differ						
	Volatiles			poor	2							
	NO2	excellent	2			Sites differ						
LaGrande	SO2			good	2							
	CO			poor			0	na	na	17	1,375	100x
	Particulates			poor								
	PM10	fair	3									
	Volatiles			poor								
NO2			poor									
SO2			good									