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Automobiles and other mobile sources are a major contributor to precursors of ozone and to carbon monoxide in urban area air pollution inventories. In a typical urban area, over fifty (50) percent of the emissions of hydrocarbons (HC) and of oxides of nitrogen (NO\(_x\)), which react in the presence of sunlight to form ozone, are derived from vehicular sources. Over ninety (90) percent of the carbon monoxide emissions in these areas are also attributable to mobile sources. This problem is accentuated in the Front Range Region of Colorado, due to the higher altitude. The Colorado Automobile Inspection and Readjustment (AIR) Program was designed and implemented in an effort to reduce the contributions to ambient air pollution from mobile sources. The intent of this study is to evaluate whether there is a difference in the effectiveness of the Colorado AIR Program on the major technological groups of emissions control configurations.

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Exhaust emission levels for 1972 model year onwards are measured over a complex driving cycle of 23 minutes duration simulating urban traffic conditions (Fig. 2), the test being carried out with the vehicle on a roller dynamometer facility. A test has been introduced for 1975-76 model years incorporating both cold and hot start conditions, a weighted mean of the cold and hot starts being used to calculate the emissions per test in grammes per mile. U.S. Federal legislation, which is enforced through the Environmental Protection Agency (E.P.A.) also calls for emission control systems. BOX 4-2 Technology Innovation and Emission Controls. The development and widespread application of pollution-control technologies have permitted reductions in criteria pollutant emissions even while vehicle miles traveled has continually increased. Early pollution-control technologies included positive crankcase ventilation valves to direct crankcase blowby emissions into the engine; charcoal canisters to sequester volatile hydrocarbons for later burning in the engine, exhaust gas recirculation valves to reduce NOx formation during fuel combustion; and catalytic converters designed to oxidize Atmospheric dispersion modeling is the mathematical simulation of how air pollutants disperse in the ambient atmosphere. It is performed with computer programs that include algorithms to solve the mathematical equations that govern the pollutant dispersion. The dispersion models are used to estimate the downwind ambient concentration of air pollutants or toxins emitted from sources such as industrial plants, vehicular traffic or accidental chemical releases. They can also be used to predict future