

combined with cancer risk factors and reference exposure levels to determine the non-cancer and cancer risk to the affected public.

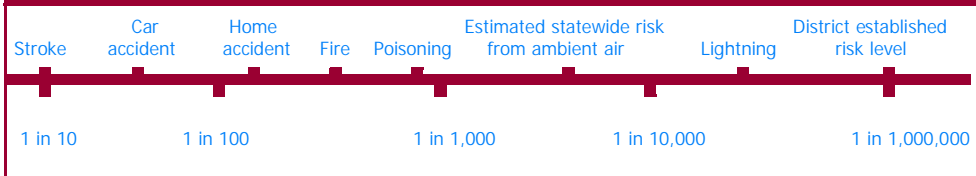
### UNCERTAINTIES

It must be noted that the calculated cancer risk involves a great deal of uncertainty. The uncertainty arises from lack of site-

specific data necessitating the use of assumptions, which are designed to be conservative. The actual cancer risk may be much less than the calculated risks.

For more information, call the San Joaquin Valley Unified Air Pollution Control District at (559) 230-6000.

### PUTTING RISK INTO PERSPECTIVE



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# What is a Health Risk Assessment ?

## WHAT IS A HEALTH RISK ASSESSMENT?



A health risk assessment is a document that describes the possible health effects that may result from exposure to air toxic chemicals. Health risk assessments are used to determine the possible health effects that may result from exposure to normal, day-to-day air toxic emissions and if a particular chemical poses a significant risk to human health. The health risk assessment also considers additional information such as weather, terrain, and the distance from the facility to the nearest residence or worksite locations.

## HOW CAN RISK ASSESSMENTS HELP?



Risk assessments help scientists and regulators identify serious health hazards and determine realistic goals for reducing exposure to air toxics so that there is no significant health threat to the public. To that end, the San Joaquin Valley Air Pollution Control District has set its action level to 100 in one million and the level of significance to 10 in one million.

## WHAT DOES THE TERM "HEALTH RISK ASSESSMENTS" MEAN ?



The term "health risk assessment" is often misinterpreted. People sometimes think that a risk assessment will tell them whether a current health problem or symptom was caused by exposure to a chemical. This is not the case. Health risk assessments are used to estimate whether current or future emissions could pose health risks to a broad population, such as a city or a community. Scientific methods used in health risk assessment cannot be used to link individual illnesses to past chemical exposures, nor can health risk assessments studies prove that a specific air toxic substance caused an individual's illness.

## WHAT ARE AIR TOXICS?



Air toxics are chemicals that are emitted into the air from a variety of sources. These toxic chemicals have been shown by scientists and other research experts to cause harmful health effects in some exposed persons. Sources of air toxics include industry, business, agriculture, vehicles, household products, wood stoves, barbecues, and more. Whether air

toxics have a harmful effect on an individual's health depends upon a number of factors, including the concentration of toxics in the air, the length of exposure and the distance persons are located from the source.

## WHAT IS EVALUATED IN A HEALTH RISK ASSESSMENTS?



The health risk assessment evaluates the acute and chronic non-cancer, and cancer risk. The acute non-cancer risk is based on short-term (one-hour) exposure to hazardous air pollutants. While the chronic non-cancer risk and the cancer risk is determined based on longer-term exposure to pollutants.

## WHAT MAKES-UP A HEALTH RISK ASSESSMENTS?



The risk assessment process is typically described as consisting of four basic steps: hazard identification, exposure assessment, dose-response assessment, and risk characterization.

Hazard identification involves identifying if a hazard exists, and if so, what are the exact pollutant(s) of concern and whether a pollutant may cause

cancer or is associated with other types of adverse health effects.

Exposure assessment estimates the extent of public exposure to each substance for which potential cancer risk or acute and chronic non-cancer effects will be evaluated. This involves the amount of emissions, modeling emission transport, evaluation on the environment, identification of exposed organs, identification of the exposed populations, and estimation of short-term and long-term exposure levels.

Dose-response assessment is the process of characterizing the relationship between exposure to a chemical and the number of adverse health effects in the exposed populations. Dose-response data developed from animal or human studies are used to develop acute and chronic non-cancer reference exposure levels. The acute and chronic reference exposure levels are defined as the concentration at which no non-cancer adverse health effects are anticipated.

Risk characterization is the last step in the risk assessment process where modeled concentrations and public exposure information, which are determined through exposure assessment, are