DECISION-MAKING FOR LOW PROBABILITY EVENTS:
A CONCEPTUAL FRAMEWORK

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Society has become increasingly concerned with developing
appropriate measures for mitigating the consequences of
low probability events which have potentially large
losses. It should be recognized at the outset that what
is a low probability event for one interested party may be
viewed as a high probability event for another.
Similarly, the relative magnitude of the losses is also a
function of where one sits. For example, the chances of
suffering a severe property loss from a natural disaster
or a severe injury from an automobile accident may be
viewed as very small by a single individual but treated as
relatively high by a government agency concerned with
national losses. Property damage from a fire may appear
staggering to the affected family but seem relatively
small at a more aggregate level due to different bases
used to evaluate consequences.

This paper proposes a conceptual framework for dealing
with events which are perceived by at least one of the
interested parties to have a small chance of occurrence.
The approach emphasizes the importance of undertaking
descriptive analysis as critical input for prescriptive
recommendations.

After outlining the framework, I will illustrate its
applicability with several examples which have both
personal significance (e.g. safety of power mowers and
motor vehicles) as well as societal importance
(e.g. siting of liquefied natural gas facilities). The
importance of understanding decision processes as critical
input to policy is underscored by empirical data on
individual decision-making with respect to insurance
protection against natural hazards. Section 4 summarizes
key results from the large-scale field survey and
controlled laboratory experiments which comprised this
four-year study and illustrates the possible roles that
the public and private sectors can play in providing
better protection against future losses. In the
concluding section, a more formal model is proposed which
incorporates the decision processes and the role of