Editing Mercury (element)

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===Mercury in fish===
[[Image:WarningMercurySign.jpg|thumb|right|250px|This is a common risk with
eating seafood.]]

[[Fish]] and [[shellfish]] have a natural tendency to concentrate mercury in
their bodies, often in the form of [[methylmercury]], a highly toxic organic
compound of mercury. Species of fish that are high on the [[food chain]],
such as [[shark]], [[swordfish]], [[king mackerel]], [[albacore tuna]], and
[[tilefish]] contain higher concentrations of mercury than others.  This is
because mercury is stored in the muscle tissues of fish, and when a predatory
fish eats another fish, it assumes the entire body burden of mercury in the
consumed fish. Since fish are less efficient at depurating than accumulating
methylmercury, fish-tissue concentrations increase over time. Thus species
that are high on the [[food chain]] amass body burdens of mercury that can be
ten times higher, or more, than the species they consume.  This process is
called [[biomagnification]].

The complexities associated with mercury fate and transport are relatively
succinctly described by USEPA in their 1997 Mercury Study Report to
Congress.  Because methylmercury and high levels of elemental mercury can be
particularly toxic to unborn or young children, organizations such as the
[[United States Environmental Protection Agency|U.S. EPA]] and FDA recommend
that women who are pregnant or plan to become pregnant within the next one or
two years, as well as young children avoid eating more than 6 ounces (one
average meal) of fish per week.<!--
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/* Mercury in fish */

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MISHAP98 models a fireball as a sphere, which just touches the ground. Experimental studies have revealed that real fireballs generated by a rupture of a gas pipeline, while beginning close to the ground, become elevated several diameters under the influence of initial momentum and buoyancy. Thus the MISHAP98 fireball model can be challenged on grounds of lack of experimental evidence. This study has uncovered another weakness, because it found that the scale of the consequences of pipeline ruptures appear to be independent of the timing of the ignition (immediate or delayed).

4.2 Vertical Jet-fire

A summary of the observed and predicted burn areas, assuming the perimeter is at the 25.6kW/m^2 contour is given in the Table 3 below. The average of upwind and downwind distances to the contour is used to calculate the area.

Table 3: A comparison of Observed and Predicted Burn Area from Jet-fires

Incident	Actual Burn Area (m)	Calculated Burn Area (m^2)	Ratio
Bealton	26,000	2,043	0.08
Beaumont	32,000	0	0
Cartwright	46,000	3,848	0.08
Edison	115,000	0	0
Erlangen	125,000	42273	0.34*
Lancaster	60,000	0	0
Latchford	47,000	0	0
Natchitoches	55,850	32,365	0.6*
Rapid City	196,200	0	0
Average			0.12

* at zero humidity

It can be seen that the jet-fire model in MISHAP98 predicts little ground burning in just over half of the accidents studied. For the remainder, where no data for humidity exists, a value of zero was assumed (worst case). Clearly the jet-fire model is under-predicting the effects of a jet-fire to a considerable extent. In addition, MISHAP98 predicts that the area of burn will be worse downwind, because the flame will be tilted in that direction. The observed pattern of burn, however, is relatively independent of the wind direction. In fact the area of burn is invariably greater downstream (rather than downwind) of the break.

The possibility that the burn area represents the spreading of a fire through grass and trees might be reasonable in some instances. If this were the whole explanation for the differences between calculation and the reports, however, then a better correlation would be expected between wind direction and the shape of the burned area. It clearly does not apply in an urban environment such as Edison. If fire spread is a significant factor, then buildings would provide less protection than assumed; setting the Building Ignition Distance to the distance to piloted ignition would be more appropriate than setting it to the distance to spontaneous ignition.