

31 Man-Rem Dollar Values in Use at U.S. Nuclear Power Plants

Table 31.1 Monetary values of dose reduction used at U.S. nuclear facilities^a

Locations	Value employed (dollar/person-rem)	Approximate 1990 equivalent value adjusted for inflation and new risk estimates
Environes of Nuclear Power Plants (10CFR50, App. I)	\$1,000 (1975)	\$10,000 ^b
DOE Facilities (1970s)	\$1,000 (minimum)	\$10,000
DOE Facilities (1989-90)	\$2,000 (minimum)	\$4,000 ^c
Nuclear Power Plants (1994)	\$5,000 - \$25,000	\$11,500 ^d (avg.)
	Mean	≈ \$9,000
	Median	≈ \$10,000

^aJohn W. Baum, "Valuation of Dose Avoided at U.S. Nuclear Power Plants," Nuclear Plant Journal, pp. 40-62, March-April 1991.

^bAdjusted for inflation using a 2.5 factor since 1975 and adjusted for higher 1990 risk estimates using a factor of four over 1970s values.

^cAdjusted for risk estimates by a factor of only two since the 1989 values employed may have included some adjustments in anticipation of higher risk estimates.

^dG.W. Kindred, Perry Nuclear Power Plant, P.O. Box 97, MSA170, Perry, OH 44081, 1994, available from ALARA Center archives.

Table 31.2 Summary of results

Basic	Median values 1990 dollars/person-cSv
ICRP 73 Review	\$2,400
U.S. Nuclear Facilities	\$10,000
Wage Differentials	\$1,200
Questionnaires	\$1,400
	Mean = \$3,600
	Median = \$1,900 ^a

^aA nominal value for dose reduction \$2,000/person-cSv.

Suggestions

It appears that expenditures for radiation risk reduction in the U.S. have, in general, been in keeping with the 1970s guidance of the NRC, which was concerned with exposures to the general public. However, the Supreme Court's suggestions that significant health risk means about 10^{-3} risk over a worker's lifetime raises the question whether nuclear power plants should have an average of <60 mrem/yr/worker as an equivalent (in risk) goal. To achieve this objective, a nominal value for dose reduction of \$2,000/person-rem (the approximate median of values in Table 35.2) is suggested for most operations and typical facilities. For exposures involving workers who may approach or exceed one cSv/yr (rem/yr), a higher value of \$10,000/person-cSv (\$10,000/person-rem) is suggested in order to keep their exposures below the NCRP recommended (age x 1) guideline. This higher value is the approximate median of 1990 adjusted values employed at U.S. nuclear facilities as shown in Table 35.1 and is consistent with (about twice) the equivalent values related to the benzene standard.