

TABLE 8.—SUMMARY OF HEALTH EFFECTS BASED ON POTENTIAL ILLNESS ASSOCIATED WITH RECALLS BETWEEN 1990 AND 1999—Continued

Problem	Class of recall	Number of recalls	Outcomes	Frequency of illness (percent)	Quality adjusted life day	Duration of illness (days)	Medical cost (\$) per event	Health cost (\$) per event
Yellow #6, red #40, blue #2 (undeclared).	2	1	Contact dermatitis	50	.....	.....	84	1,205
			Abdominal cramps	10	0.473	3	84	938
Copper salts	2	1	Contact dermatitis	90	.....	.....	84	1,205
Digitalis	1	33	.....	100	0.473	1	84	369
Ephedra (undeclared)	1	1	Mild	94.9	0.473	3	84	938
			Severe (heart block)	5	.....	.....	1,247	455,883
			Death	0.1	.....	.....	.....	5,000,000
			Cardiovascular	14	.....	.....	1,415	3,530
			CVS w/chronic	2	.....	.....	2,591	457,227
			Nervous system	14	0.47	2	1,331	1,900
			NS w/chronic	2	.....	.....	2,507	455,597
			Liver impairment	4	.....	.....	168	4,342
			Exfoliative dermatitis	7	.....	.....	84	1,206
			Other	54	0.29	1	0	174
Lactose (undeclared) intolerance.	2	1	Death	3	.....	.....	2,507	5,002,507
			Mild	100	0.48	1	0	290
Iron poisoning	2	1	Mild	100	0.48	1	84	374
Sulfites (undeclared)	1	1	Mild allergic reaction	100	0.44	2	0	529

We used the transformed value of statistical life to estimate the value of QALD. For the most likely value of a statistical life day, we used \$630. We derived this value from a widely-used estimate of the value of a statistical life: \$5 million. The \$5 million estimate is based on calculations matching labor market risks with wages for risky jobs. Workers in risky jobs tend to receive increased wages to compensate them for (usually) small increases in the probability of death. The implicit value of a statistical life is the increased wage divided by the increased probability of death. The advantage of valuing statistical lives with this method is that it reflects the observed willingness of workers, and by inference, of the whole population of adults, to accept small risks to their lives in a real world risk-dollar tradeoff.

We turn the estimated value of a statistical life into a value of a statistical life day by first assuming that the workers have a remaining life expectancy of 36 years (Ref. E18). Using a 3 percent social rate of time preference, the present value of 36 years is 21.83 years. The social rate of time preference is the average long-term real rate of interest, with no premiums for risk and other factors that affect interest rates. Most analysts use the average real rate on long-term treasury bonds (3 to 5 percent in recent years) to represent the social rate of time preference. The discounted expected days lost for a statistical death is $21.83 \times 365 = 7,968$. Therefore, the value of a statistical day

is \$5 million/7,968, which is approximately \$630. We use this value to estimate the public health benefits from preventing illness.

In addition to lost productivity and pain and suffering, illness caused by supplement contamination leads to direct medical costs. Direct medical costs include the cost of medicine, hospitalization, and visits to physicians and other professionals. We included all estimated medical costs, not just out-of-pocket expenses. These full medical costs often are missed because most medical care is covered by health insurance that separates the bearer of the medical cost (society) from the bearer of the utility losses (the ill person).

The total costs of illnesses caused by the contamination of dietary supplements from poor manufacturing practices would be the costs per illness (classified by severity) multiplied by the number of illnesses (classified by severity). For chronic illnesses, the utility losses and medical costs stretch indefinitely into the future. We used a real discount rate of 7 percent to calculate the present value of chronic medical expenditures and utility losses. OMB suggests using a real discount rate of 7 percent to analyze the costs and benefits of regulations. This rate approximates the marginal rate of return on an average investment in the private sector in recent years. We used a different discount rate for the social rate of time preference (3 percent) and the discount rate of future medical costs (7 percent). Medical costs, like all

expenditures, reflect the foregone benefits from alternative investments. The pure social rate of time preference can differ from the return on private investments.

6. Benefits and Costs

Changes in current practices by manufacturers, or consumers, or both, cause incremental (marginal) benefits and costs. There are several possible reactions manufacturers might have to the proposed regulatory requirements:

- Stop producing dietary supplements and possibly go out of business.
- Move production to a foreign country where compliance with these regulations is more difficult to enforce.
- Comply with part or all of the proposed regulation. Consumers will likely be confronted with higher priced dietary supplements but also products that are, on average, more uniform and higher quality. To the extent that the latter is unknown to consumers, they will probably reduce consumption of dietary supplements, perhaps in some cases substituting them with alternative products such as foods.

The benefits from the proposed regulation and the regulatory options result from reducing contamination and adopting practices that will result in consistently high quality dietary supplements. Creating industry-wide minimum requirements for good manufacturing practices should reduce the occurrence of product defects, which in turn should reduce the number of illnesses and deaths.