

Table VI-1. By age, average reduction in cases of occupational respiratory disease expected to result from implementation of single sample and plan verification rules.

| Type of Miner | Reduction in Cases of Occupational Respiratory Disease | | | | | | | | |
|---|---|------|------|--|------|------|-----|-----|------|
| | per 1,000 Affected Miners | | | | | | | | |
| | Simple CWP ^a (categories 1, 2 or 3) or PMF ^b ("CWP 1+") | | | Simple CWP (categories 2 or 3) or PMF ("CWP 2+") | | | PMF | | |
| | Age | | | Age | | | Age | | |
| | 65 | 73 | 80 | 65 | 73 | 80 | 65 | 73 | 80 |
| Affected Designated Occupation Miners ^c (DO) | 16.6 | 24.4 | 30.6 | 6.3 | 15.5 | 28.0 | 2.8 | 7.6 | 16.1 |
| Affected Non-Designated Occupation Miners ^d (NDO) | 1.6 | 2.3 | 2.9 | 0.6 | 1.5 | 2.7 | 0.3 | 0.7 | 1.5 |
| Affected Roof Bolter Designated Areas Miners ^e (RB-DA) | 13.0 | 19.6 | 25.3 | 4.8 | 12.1 | 22.5 | 2.2 | 6.0 | 12.8 |

^a Simple CWP: simple coal workers' pneumoconiosis.

^b PMF: progressive massive fibrosis.

^c Affected Designated Occupation (DO) Miners: includes all miners who work at the 57 percent of the Mechanized Mining Units under consideration and who are exposed to dust concentrations similar to the DO, over a 45-year occupational lifetime. Risk reduction estimates are based on reducing the mean dust concentration of 1.15 mg/m³ (Std. Error = 0.018) observed in 2001 for DOs at the MMUs under consideration.

^d Affected Non-Designated Occupation (NDO) Miners: includes all underground faceworkers under consideration who are not classified as the DO or a "designated area roofbolter." Risk reduction estimates are based on reducing the mean dust concentration of 1.08 mg/m³ (Std. Error = 0.011) observed in 2001 for the NDO sample showing the highest dust concentration on a given MSHA sampling day within an MMU.

^e Affected Roofbolter Designated Area (RB-DA) Miners: includes all miners working as roofbolters in the 29.4 percent of RB-DAs exhibiting a pattern of recurrent overexposures. Risk reduction estimates are based on reducing the mean dust concentration of 0.94 mg/m³ (Std. Error = 0.025) observed in 2001 for the RB-DAs under consideration.

Appendix VI.1 DO Overexposure Patterns

In 1998, MSHA attempted to enforce compliance on individual shifts. Therefore, to compare the 2001 pattern of excess exposures on individual shifts to that of previous years, MSHA examined the regular bimonthly DO sample data submitted by mine operators in the 10 years from 1990 through 1997 and 1999–2000. The same three parameters were considered as discussed above for 2001: (1) The percentage of MMUs exhibiting a pattern of recurrent overexposures, as indicated by at least two of the valid measurements being above the applicable standard in a given year; (2)

for those and only those MMUs exhibiting recurrent overexposures, the overall percentage of production shifts on which the DO was overexposed, as estimated by the percentage of valid measurements above the applicable standard; and (3) for the MMUs identified as exhibiting recurrent overexposures, the mean excess above the applicable standard, as calculated for just those valid measurements that exceeded the applicable standard in a given year.

Although MSHA found minor differences between individual years, there was no statistically significant upward or downward trend in any of these three parameters over the 1990–

1997 time period (see Table VI–2). Beginning in 1999, however, there was a significant and persistent decrease in the average excess above the applicable standard (Parameter #3) for MMUs exhibiting recurrent overexposures. MSHA attributes this decrease to two important changes in the Agency's inspection program, beginning near the end of 1998. These changes, which both resulted in increased inspector presence, were: (1) An increase in the frequency of MSHA dust sampling at underground coal mines; and (2) initiation of monthly spot inspections at mines that were experiencing difficulty in maintaining consistent compliance with the applicable dust standard.