14

The Legislation

To inquire into . . .

(f) whether there was compliance with applicable statutes, regulations, orders, rules, or directions

(g) all other matters related to the establishment and operation of the Mine which the Commissioner considers relevant to the occurrence

As part of my preparatory work before the public hearings of this Inquiry began, I undertook a general review of legislation pertaining to mining and safety in Nova Scotia and in other jurisdictions. The results of that review as it pertains to specific issues have been covered in earlier chapters in this Report. There are a number of more general observations relating to legislation that I wish to make here. Finally, I have a few comments and recommendations to make on the question of smoking and underground miners. There was some mention during the hearings and during miners' interviews about illicit smoking underground at Westray. Although there is no causal connection between the events of 9 May 1992 and the use of tobacco underground, it remains a serious problem within the industry. For this reason, I think the subject must be addressed.

General Legislative Review

What should the aim of mining legislation and regulations be? Clearly, the aim should be the protection of the miner in the mining environment in a manner consistent with safe production. Coal mining is inherently hazardous, and safety regulations must protect the miner in a way that is consistent with the economic viability of the undertaking. Both the reports of inquiries chaired by Kevin Burkett and James Ham on the Ontario mining industry, reports I have found helpful throughout this Inquiry, expressed this goal in terms of safe mine production.[1]

The Burkett Report places great stress on non-legislative components and suggests that "attitude" is the most significant single factor in attaining safe mine production:

> It should be noted that the successful performers, without exception, support their unequivocal commitment to safe production on the basis of social, moral and financial grounds. The legal requirements are viewed as bare minimum.

This general concept was repeatedly stressed during interviews with mining officials in both Canada and the United States. It is clear that "attitude" cannot be legislated but must be cultivated within an organization, whether it be a mining company, a union, or a government agency charged with enforcement of safety legislation. In the context of

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1 Joint Federal-Provincial Inquiry Commission into Safety in Mines and Mining Plants in Ontario, *Towards Safe Production*, 2 vols. (Toronto, 1981) (Chair Kevin M. Burkett) [Burkett Report], 26; Ontario, Royal Commission on the Health and Safety of Workers in Mines, *Report* (Toronto: Ministry of the Attorney General, 1976) (Commissioner James M. Ham) [Ham Report].

the mining company, Burkett found that safety attitudes must emanate from the very top echelon of corporate management:

> We have found that a strong management commitment to safe production, that is, an organizational requirement that defined safety standards be met, is the dominant common characteristic exhibited by the companies which demonstrate superior performances. We have discovered further, that it is the chief executive officer who sets the tone and ensures that safety is given the priority which it deserves. He establishes the policy, defines the responsibilities and allocates the resources necessary to bring about a safe working environment.[2]

The report also recognized that the matter of safe production cannot be viewed in isolation. The chief executive officer of the company, as well as other management, has financial and production goals to meet. The two, often-competing goals must be reconciled so that the commitment to safe production is not undermined. This enigma was stated as follows:

> If middle management or line supervision is required to meet production targets which have not been developed in concert with safety goals, they may be required to make trade-offs which they are not equipped to make. Inevitably, the company's ostensible commitment to safety will be undermined in the eyes of its workers and decisions will be made which may subject individual workers to unacceptable risks.

The report then quotes a passage from a submission made by Texasgulf, describing how that company attempted to reconcile these competing interests:

> At Texasgulf we believe that much of our success in accident prevention is attributable to the margin of safety available in our operations. We define this margin of safety as the amount of extra capacity available to make up or prevent a production loss caused by a major unforeseen outage. Broadly interpreted, the loss might be a large unit of equipment out of service, questionable local rock conditions, high absenteeism, a shortage of adequately trained labour and so on. It is a reserve that the manager, superintendent, shift boss and even the worker can call on to meet his assigned tasks without taking risks to catch up.[3]

The concept of the "margin of safety" is essential to a realistic attainment of the goals of safe mine production. A mine operator working on a very fine margin with little or no cushion would seem to invite lapses in safety procedures in order to maintain or preserve economic or financial viability. This concept of margin of safety has been expanded upon in other studies.[4] I recommend the Burkett Report for its insight into the relationship between safe production in mining and the economic and

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2 Burkett Report, 24. There is no indication that Clifford Frame, chief executive officer of Westray, moved to set the tone to ensure that safety was a priority. In fact, failing any evidence to the contrary, it appears that the practice that was, at least implicitly, fostered by Frame, was motivated by production imperatives.

3 Burkett Report, 27. As an aside, Burkett spoke in glowing terms about the safety record and superior performance of Texasgulf.

4 Paper presented to the Burkett Inquiry by Professor Basil Kalymon, University of Toronto School of Business; also, "Canadian Resources Management: Concepts and Cases," by the same author.

financial realities of the mining industry. The report also offers insights into the interrelationship of management, union, and government in the quest for safe mining. The Ham Report, with its 117 recommendations, formed the basis for modern mining legislation in Ontario. Ham articulated the concept of internal responsibility, discussed in Chapter 12, Department of Labour.

Underground Coal Mining Permits

It is obvious that legislative change will not, of itself, ensure that future coal mining in this province will be carried out with safety as the paramount consideration. Attitudes must be directed towards safe mine production, and mine operators, unions, and government must dedicate themselves to this concept. To further relieve the pressure on mine operators and miners, there must be a safety factor built into production schedules, ensuring that safety considerations are not put on the back burner in the event of unpredictable events, as alluded to in the Texasgulf submission quoted above.

RECOMMENDATION

59 **Any applicant for an underground coal mining permit should make a clear and unequivocal commitment to the concept of mine safety in the context expressed in the phrase – safe mine production. This clear commitment must be manifest in mine development proposals and plans. Therefore, before a mining permit is granted, the applicant should have to show that it has sufficient financial and other resources to ensure a reasonable margin of safety. The existence of this margin of safety will minimize the possibility that safety measures may be overlooked or avoided to maintain production schedules.**

Underground Coal Mining Regulations

What should the goal of safety legislation and other safety initiatives in the coal mining industry be? J.C.H. Longden set out the place of legislation in relationship to mine safety as follows:

> For over 100 years, the hazards associated with mining have been recognised. From this realisation, one of the key demands placed on those associated with the running of the mining industry – that of a responsibility for the safety of the operation and those involved in it – has been established. *That responsibility forms the core of the strict legislative framework that most mature mining industries work under.*[5]

There appears to be little question that mining legislation in Nova Scotia is out of date. One example should suffice: the principal method of roof control used in mines at present is roof bolting, and the *Coal Mines*

[5] J.C.H. Londen, "The Management of Health and Safety at the Workplace," paper presented at Minesafe International Conference (Perth, Australia, 1993). Emphasis added.

Regulation Act does not mention it. Dr Miklos Salamon in his report to this Inquiry said:

> Section 75(1) [of the act] does no more but require that the roof and sides of all roadways and working places should be made secure. No guidance is given as to how this is to be done.[6]

With respect to other provisions in the Act, Salamon went on to say:

> Similarly, no specific guidance is given to the Chief Inspector and his staff for the inspection of a mine. An inspector has sweeping powers to effect safety in a mine, he may even order the closing of a mine, see Section 64(1), but his decisions in this regard depend upon his judgement and discretion.
>
> It is submitted that to operate mines safely under such a vague legislation requires exceptionally competent, responsible and co-operative teams on both sides of the fence. Such simplistic legislation places the burden of the responsibility on the operating management and on the inspectorate to formulate the principles and methodology of safe operations on an ad hoc basis.
>
> . . . Because of the lack of any specificity in the Act and its regulations, problems in the mine may remain undetected and no warning of possible hazard emerges, *until it is too late*. [Emphasis added.]

One mine operator who showed considerable familiarity with the Nova Scotian mining scene told me that it would be very difficult to operate in the province since it was almost impossible to know the rules of the game – indicating that the mining regulations lacked specificity and too much was left to the discretion of the inspectorate.[7] This confirms the view expressed by Salamon. It is within this context that I have reviewed the Nova Scotia coal mining legislation and regulations and make the following recommendations.

At present, the underground coal mine operator must be familiar with at least three statutes. Application to open a mine is governed by the *Mineral Resources Act*.[8] Safety rules for operations above ground, and some below ground, are partially covered by the *Occupational Health and Safety Act*.[9] Finally, the operation of the coal mine is governed by the *Coal Mines Regulation Act*.[10] Since these are all acts of the provincial legislature, any changes in the legislation must be by amendment passed through the legislative process. Legislators should not be expected to have a broad enough knowledge of the coal mining industry that they can deal adequately with the various technical aspects of the legislation. Also, the nature of the legislative process makes it most difficult to respond in a timely manner to changes in mining technology.

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6 M.D.G. Salamon, "A Geotechnical View of Westray Mine," report to the Westray Mine Public Inquiry, 1995 (Exhibit 58.2), p. 25.

7 The failure of this sort of approach may never have been more obvious than in the case of the relationship between Westray management and the Department of Labour inspectorate.

8 SNS 1990, c.18.

9 1996, c.7.

10 RSNS 1989, c. 73.

Other jurisdictions reviewed in the preparation of this Report have resolved these problems in somewhat varied but apparently workable ways. In the United States, most if not all of the states have, in the interests of uniformity, transferred much of their legislative authority respecting mine safety to the federal authorities. As a result, the U.S. Mine Safety and Health Administration (MSHA) and its several subagencies have established uniform rules for the operation of coal mines in that country.[11] Title 30 of the *Code of Federal Regulations* (CFR), parts 1 to 199, sets out, in very detailed terms, the regulations under which mining is conducted in the United States.[12] Part 75 of 30 CFR comprises Mandatory Safety Standards – Underground Coal Mines. Part 75 contains more than 450 specific regulations, covering every aspect of underground coal mining.

The province of Ontario has adopted a similar approach by establishing regulations under the *Occupational Health and Safety Act*. The *Regulations for Mines and Mining Plants* (1990) is a comprehensive list of rules for the safe operation of mines and the mining infrastructure above ground. There are some 282 regulations divided into 11 parts covering everything from mine design and development to the working environment of the mine. In Ontario, the Mining Legislative Review Committee meets regularly to review the regulations in the context of developing technology or to respond to specific requests. This committee, comprising labour and mine owners, appears to be quite effective in keeping the regulations current with technology, as well as developing safety considerations.[13] British Columbia has done essentially the same thing under the *Mines Act* by promulgating the *Health, Safety and Reclamation Code for Mines in British Columbia*.

After a disaster, there is a temptation to overreact. With respect to the formulation and implementation of mining regulations, Salamon has made two general observations that need to be remembered. First, the requirements of the regulations should not be unreasonably onerous. If this golden rule is overlooked, mine management will go through the motions of observance but without the attention to the substance of the regulations. Second, excessive volumes of regulations and restrictions are often counterproductive. It is critical to their success that mining regulations are reviewed in substance originally and revised thoughtfully when circumstances change.

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11 Some states retain jurisdiction, in varying degree, over certain aspects of underground coal mining, such as mine rescue. West Virginia, for example, has a highly organized mine rescue system, which is administered by the state. I am told that where there is duplication of regulations the stricter rule is enforced.

12 United States, Title 30: Mineral Resources, *Code of Federal Regulations* (Washington, DC: Office of the Federal Register, National Archives and Records Administration, July 1996) [30 CFR].

13 Ian Plummer by letter of 28 May 1997 provided a brief description of the operation of this committee, which was established by section 21 of the Ontario *Occupational Health and Safety Act*. Plummer observed that the Nova Scotia Occupational Health and Safety Advisory Council, or a subcommittee thereof, could fulfil this function in Nova Scotia.

RECOMMENDATION

60 All rules and regulations relating to the operation of coal mines should be contained in Regulations made pursuant to the *Occupational Health and Safety Act*. The *Coal Mines Regulation Act* and the portions of the *Mineral Resources Act* dealing with operations should be repealed.

Legislative Review Committee

RECOMMENDATION

61 A legislative review committee should be established to review periodically the underground coal mine regulations to ensure that the regulations reflect current technology and that the use of such technology is consistent with mine safety. The committee should have the power to engage mining consultants with specific expertise consonant with the technical matters being considered. This committee could be modelled after the Mining Legislative Review Committee of the province of Ontario and should contain representation from the provincial departments involved in the planning and regulation of underground coal mines.

The recommendation for the legislative review committee implicitly recognizes that Nova Scotia does not have a large coal mining industry in which such expertise would necessarily be available. Such committees are not uncommon in coal mining regulations or statutes. I have already alluded to the Mining Legislative Review Committee in Ontario. In South Africa, the *Mines and Works Act* provides for the establishment of a Mine Safety Committee to "advise the Government Mining Engineer on the supervision to be exercised over mines . . . on anything or practice which affects or is likely to affect the safety of [*sic*] health of persons employed at mines."[14]

Some flexibility is needed so that new techniques or technology can readily be introduced into a mine without compromising safety. Exemptions or variances to the regulations should be subject to approval by the legislative review committee within a fixed time after their implementation, thus providing another level of review.

RECOMMENDATION

62 The regulator should be given authority to grant exemptions to or variances in the regulations if satisfied that such exemptions or variances will in no way detract from the safety of the miners and other underground workers. The burden is on the mine operator to demonstrate to the satisfaction of the regulator that safety considerations have not been prejudiced.

[14] *Mines and Works Act*, Act No. 27 of 1956, section 2.

The inspectorate must be informed by mine operators or developers, at the earliest time, of mine planning or alterations in plans. It must be satisfied that mine plans are consistent with the geological structures and configurations in the area to be mined. It must also be satisfied that the plans conform with the regulations and with safe mining practice.

There seem to be two approaches to the manner in which mine plans are handled. In some cases, the plans and alterations to plans are merely filed with the relevant statutory body, whether it be the inspectorate or a technical committee. In other cases, the plans are subject to the approval of the inspectorate before the operator can proceed with development as based on those plans. It is my view that prior approval of plans by the inspectorate is the proper approach from the perspective of safety.

RECOMMENDATION

63 **A mine developer or mine operator should submit all mine plans, including plans for the development, construction, or alteration of an underground coal mine, to the regulator for approval. No such plans should be acted upon or otherwise implemented until they have been approved in writing by the regulator. The regulator may require further detailed plans of the mine or the surrounding geological configurations. The regulator may require that the developer or operator have the plans, or portions of them, reviewed at the expense of the developer by mining consultants having expertise in any or all of the following disciplines: rock mechanics, mine ventilation, roof control, underground equipment, and electrical applications.**

New Regulatory Regime

At the present time, there are no underground coal mines operating under provincial jurisdiction in Nova Scotia. The last such mine was Westray. There seems to be ample coal on the world market, and surface mining, such as that being carried out at Westville, Nova Scotia, produces a product more competitively priced than that of a deep mine. In 1994, Industry Canada commissioned John T. Boyd Company to prepare a feasibility study of the Westray mine Foord seam.[15] The conclusions in the Boyd report seem to support the proposition that reopening a deep mine similar to Westray would not be economically feasible at this time.[16] In addition to the economics, there are the observations shared by Dr Miklos Salamon and the Boyd report that mining in the Foord seam may not be

[15] John T. Boyd Company, "Mine Feasibility Study – Westray Mine Foord Seam, Pictou County, Nova Scotia, Canada," Pittsburgh, June 1994 (Exhibit 26).

[16] Boyd suggests that to extract coal from a reborn Westray would require a price of almost Cdn$100 per tonne. For more than a decade, the market price of coal has cycled between about US$31 and $45 per tonne. That translates to less than Cdn$70 fob the Trenton power plant, far below an economical price.

technically feasible owing to adverse ground conditions and the depth of the seam.[17]

One cannot say with certainty that underground coal mining will not regain a prominent place in the economy of mainland Nova Scotia. There are too many variables at work to make such a prediction. Changes in world markets, world economic conditions, and advancing technology could all play a significant role. There are other coal seams in the Pictou coalfields and in other areas of Nova Scotia, such as Colchester County, which could become economically viable in time.

The possibility of combining underground coal mining with degasification could change the economic equation and render such a mine more financially attractive. Certainly this is the case at the Jim Walter Resources mines in Alabama, where gas extraction made mine ventilation more economical and also provided an additional source of revenue to the mine operator. It will be necessary in Nova Scotia to await the result of the present studies in gas extraction in the Pictou coalfields to determine whether this is a valid consideration here.

In the meantime, a regulatory regime should be formulated so that any prospective operator of an underground coal mine will have a clearer idea of the regulatory environment. At the present time, Nova Scotia coal is regulated by two separate regimes, federally by the coal mining regulations made pursuant to the *Canada Labour Code*, and provincially by the *Coal Mines Regulation Act*. Labour Canada's inspectorate in Sydney administers the *Canada Labour Code* regulations at the Devco mines. In my view, it is unrealistic to have two such regimes in place in a province the size of Nova Scotia.

RECOMMENDATIONS

64 The province should take immediate action to reach agreement with the federal Department of Labour for the inspectorate of that department to assume the underground coal mine regulation and inspection functions currently under the aegis of the provincial Department of Labour.

65 The province should collaborate with the federal Department of Labour to draft updated underground coal mining regulations applicable to all coal mines in Nova Scotia. These common regulations would then be administered throughout the province by the inspectorate at present functioning under the provisions of the *Canada Labour Code* regulations. Such regulations should be drafted with the advice and assistance of competent coal mining professionals with demonstrated expertise in the various fields of ventilation, ground control, electrical applications, training, and mine rescue.

[17] Boyd excluded coal resources in grades steeper than 18° or with a high ash content. Boyd's mine plan excluded coal beneath the town of Stellarton and the Trans-Canada Highway. The plan called for a 2 m coal roof. All these exclusions resulted in mineable reserves of 5 to 7 million tonnes, considerably reduced from Westray's 15 million tonnes.

Implementation of these regulations will require close cooperation between the two levels of government. There are constitutional issues to be resolved as well as financial implications for the province in contracting out its regulatory functions to the federal government.

The advantages to this approach ought not to be overlooked. First, mine operators, miners, and regulators will have an updated regulatory regime common to all operations within the province so that mobility and consistency would be enhanced. There is no practical reason why coal mining regulations cannot be standardized throughout the province.[18] Second, the people of Nova Scotia must have lost confidence in the provincial inspectorate in light of its inadequate performance at Westray and the conduct of its members at this Inquiry. Those members of the provincial inspectorate connected with the Westray mine ought not to be entrusted to carry out safety inspection duties in view of their past performance and attitude. The federal inspectorate is in place in Sydney. Its staff, which constitutes a core of experienced and qualified professionals, could readily be built upon as required.

It is essential that the administration of underground mining regulations be competent and aggressive. Another recurring theme throughout the industry, as gleaned from many interviews, is that *regulations are only as good as the enforcement and administration of them*. It has been stressed on several occasions that mine inspectors must be certified mining engineers.[19] Virtually all mine managers and most underground mine managers are professionally trained mining engineers. The inspectorate must be able to face them on an equal professional basis to avoid being overpowered. To maintain their professional expertise, mine inspectors should attend at regular intervals institutions that specialize in mine safety, such as the National Mine Health and Safety Academy in Beckley, West Virginia.

RECOMMENDATION

66 **If it is decided to pattern the Nova Scotia coal mine regulation regime after that of the United Kingdom, all mine inspectors should have at least a degree in mining engineering, with some specialist training in both rock mechanics and ventilation relating to underground coal mining. If the U.S. Mine Safety and Health Administration approach is adopted, all mine inspectors should receive adequate initial training. In either case, all mine inspectors should be required to take periodic training, of at least one week per year, at an institute specializing in mine inspection and safety.**

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[18] Mining expert Dr Malcolm McPherson suggested in conversation that Canada should have a common regulatory regime with a common inspectorate. This would be much the same as the regime in the United States, administered by the Mine Safety and Health Administration. It is a worthwhile proposal, but beyond the scope of this Report.

[19] This follows the approach to mine inspection adopted in the United Kingdom and in most Canadian jurisdictions. The U.S. approach is to engage technicians who enforce very comprehensive regulations and who have engineering back-up when needed.

Smoking

One of the most disturbing aspects of mine safety, and one that the individual miner can control, is the practice of tobacco smoking. The various statutes I reviewed all contain prohibitions, not only against smoking in underground mines, but also against possession of smoking materials underground. The *Coal Mines Regulation Act* of Nova Scotia is very explicit:

> **88(4)** Subject to subsection (1) [referring to authorized use of combustion equipment such as welding gear] no person shall have in his possession in any mine any match or apparatus of any kind for striking a light, any pipe for smoking tobacco, any tobacco for smoking, cigars, cigarettes or tobacco in any other form for smoking purposes.

Subsection 5 then sets out requirements for miners to be searched on a periodic basis for smoking materials.

The U.S. provision as set out in section 75.1702 of 30 CFR is equally explicit. The *West Virginia Mining Laws Manual,* Vol.11, Underground Coal Mine, section 22A-2-57, prohibits the use or possession of smoking materials in all mines and requires that the operator "shall at frequent intervals search, or cause to be searched, any person, including his clothing and material belonging" in order to prevent the carrying of smoking materials into the mine. Similarly, the Province of Alberta in the *Coal Mines Safety Regulations*, section 339(1), AR 333/75, mandates a complete prohibition against smoking and requirements for searching and inspections for the detection of smoking materials. The *Health, Safety and Reclamation Code for Mines in British Columbia* (1992), Part 3, section 3.5.2, has similar regulations.

In spite of this, and in the face of good common sense and judgment, smoking remains a problem in underground mines. Several of the mine specialists at the National Mine Health and Safety Academy in Beckley, West Virginia, personally expressed to me their concern respecting this problem.

I alluded at the beginning of this report to the investigation of the 7 December 1992 explosion at the Southmountain Coal Company in Virginia. That explosion, which occurred at about 6:30 AM, killed eight miners and seriously burned another. The burn victim had been out of the direct line of the explosive blast, working in one of the cross-cuts closer to the main portal than his colleagues. Although the subsequent investigation found certain defects in some equipment, after exhaustive examination and laboratory testing the investigators concluded: "Based on these facts, the ignition of the explosion did not occur at any of the machines or devices."

With respect to the matter of smoking, the investigators continued:

> On December 12, 1992, the victims were brought to the surface. Three of the victims had carried smoking materials in the mine. One pack containing nine unsmoked cigarettes was found on the victim in the No. 2 crosscut

> between the Nos. 1 and 2 entries. The butts of ten smoked cigarettes were also found in the victim's pockets. Some of the butts were in the container used to transport the victim to the medical examiner's office. One pack of cigarettes and one butane cigarette lighter were found on the victim outby the pillar line in the No. 2 entry between Nos. 1 and 2 crosscuts. One pack of cigarettes and one butane cigarette lighter were found on the victim in the No. 2 crosscut between Nos. 3 and 4 entries.[20]

During a later examination of the immediate area of the explosion in the mine, two packages of cigarettes, two butane lighters in a lunch box, two cigarette butts, and another butane lighter were found. The lighter was found to be functional.

According to numerous mining officials, the clandestine transport of smoking materials into underground coal mines remains a nagging and frightening reality. This problem does not concern the well-known health hazards associated with smoking, such as lung disease, heart and artery problems, and the like. What it does concern is the wilful and wanton disregard for the safety of companion workers. In the Southmountain disaster this translated into the death of eight miners and the disfigurement of another.

During my visit to the Phalen mine of Devco in New Waterford, Nova Scotia, I noticed a large number of the miners using chewing tobacco. Although I do not advocate this practice, which is a matter of personal preference for the individual, I mention it as a way in which some conscientious miners have dealt with the problem of nicotine addiction.

It is obvious that the legislative prohibitions are not working as well as one would expect. There obviously are those who are willing to take chances with their own lives, as well as the lives of their fellow workers, for a smoke.

RECOMMENDATION

67 Labour and management should work together to educate and regulate the underground miner with a view to eradicating the practice of smoking in the coal mining environment. The following requirements should apply:

(a) Tobacco smoking and the possession of smoking materials and lighters by any person underground should be grounds for immediate dismissal from employment, the reason for dismissal to be recorded in the employee's record.

(b) Proof of tobacco smoking underground or possession of smoking materials underground should provide sufficient grounds for dismissing any grievance taken by an employee for unjust dismissal, and any arbitrator should be prohibited from substituting any other penalty in lieu of dismissal.

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[20] U.S. Department of Labor, "Underground Coal Mine Explosion – 7 December 1992, No. 3 Mine (ID No. 44-06594) Southmountain Coal Co., Inc., Norton, Wise County, Va." Report of Investigation, pp. 26, 29.

(c) **Labour and management, with the cooperation of the Department of Labour, should investigate the feasibility of acquiring tobacco detection devices that would monitor miners entering the mine.**

This recommendation may appear somewhat Draconian. In view of the clear danger and the apparent reluctance of some to respect the present prohibitions, and indeed respect the lives of their fellow workers, I believe such measures to be justified.

PART FOUR

The Aftermath

Rescue Efforts and The Inquiry