
Smoking Cessation Programs in Occupational Settings

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CIGARETTE SMOKING has been called this country's foremost preventable cause of death and disability and its greatest public health problem (1,2). The estimated data for premature death and unnecessary disability are staggering. In 1977, smoking played a major role in 220,000 deaths from heart disease, 78,000 lung cancer deaths, and 22,000 deaths from other causes (1). Smoking has been estimated to be responsible for 20 percent of all cancer, 25 percent of all cardiovascular disease, and 40 percent of all respiratory disease (3).

To a considerable extent, public health campaigns

have successfully alerted the general public about these risks, and most smokers (perhaps as many as 90 percent) have stated that they would like to quit. A survey by the Center for Disease Control in 1976 and a Gallup poll in 1974 found that upwards of 60 percent of adult smokers had made at least one serious attempt to quit smoking (4,5). These surveys, however, also showed that almost 53 million Americans still smoked.

The economic costs attributed to smoking have been cataloged and found to be of similar vast proportions. Luce and Schweitzer (6) estimated that in 1976 cigarette smoking cost the country \$27.5 billion, of which \$19 billion was attributed to lost production. Estimates of the number of working days lost annually because of smoking range from 77 million in 1971 (7) to 81 million in 1978 (8). One source has suggested that smoking costs \$3 per day per smoking employee, based on insurance costs, sick days, absenteeism, down time, lost productivity, and maintenance costs (personal com-

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munication, October 1978, from B. Mattes, Services Division, SmokEnders Corporation, Phillipsburg, N.J.).

The growing recognition in the business community of the overwhelming evidence of dangerous health consequences from smoking and a clearer perception of its more immediate economic impact have led an increasing number of companies—at least 3 percent of all U.S. companies and 6 percent of all Canadian companies—to offer special programs or incentive plans to encourage employees to stop smoking (9). There has been also a concurrent growth of interest within the scientific community about the potential benefits of systematically encouraging smoking cessation in the occupational setting, interest which has been heightened by epidemiologic evidence showing greatly accentuated risks from occupational cancers related to smoking (10).

In this report I summarize the current status of smoking control from the prospective of (a) the research literature on smoking and (b) current smoking control programs in occupational settings, citing examples. (The information cited in the examples was obtained by personal interviews with the programs' medical directors.)

Trends in Smoking Cessation Research

An impressive amount of research worldwide has been directed at uncovering effective methods for smoking cessation (11-13). Helpful methods have been identified, but their absolute effectiveness has proved somewhat disappointing. Hunt and Bepalec (14) examined 89 studies in the literature and found that more than half of the persons who had stopped smoking by the end of a program subsequently relapsed; the greatest recidivism appeared within the first 5 weeks of followup. These compelling results, along with the corresponding evidence of changes in the smoking rate (see chart), have helped to establish a 30 percent abstinence level as the benchmark or frame of reference against which the incremental efficacy of specific smoking cessation programs can be measured.

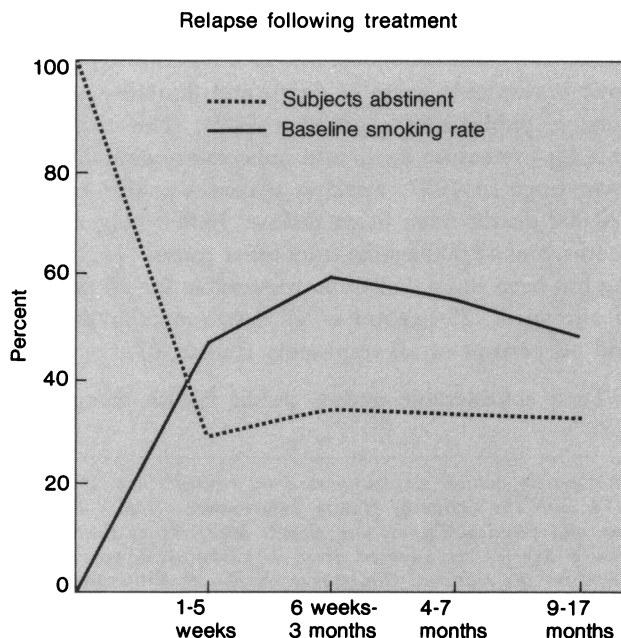
The social learning theory has been one source of optimism about the future of antismoking programs (11):

... some progress has been made in terms of treatment effects, research methodology, and the ways in which the problem is conceptualized. This progress justifies a measure of cautious optimism about the future of the field and, because the social learning approach has resulted in the clearest increments in technical, methodological, and conceptual sophistication, about the fruitfulness of applying it to the modification of smoking behavior.

Behavioral research. Aversive smoking procedures are among the approaches to smoking cessation reported in the literature that seem to hold the most promise. In these procedures, cigarette smoke is used as an unpleasant stimulus, for example, in the form of hot smoky air, oversmoking, and rapid smoking. I consider these approaches here in the context of aversive conditioning, but the importance of pharmacological, cognitive, and self-control features of the experience has also been acknowledged (12,15).

By far the most research on aversive smoking has focused on the rapid smoking procedure. In the standard format, participants meet alone or in a small group and are instructed to smoke successive cigarettes in an accelerated manner (puff every 6 seconds) until either a personal tolerance or a time limit is reached (whichever occurs first). In early research, uniform (100 percent) abstinence was reported at termination and 60 percent abstinence at 6 months followup, fully twice the benchmark level noted earlier. Results from more recent research have proved somewhat less impressive. Overall, however, the rapid smoking procedure has been found to be relatively more effective than other cessation programs. Its absolute effectiveness ranks above the 30 percent level used as a general measure of efficacy.

Unfortunately, rapid smoking cannot be used by many smokers since it acutely stresses the cardiovascular system. Research is continuing both to determine the extent of risk and to establish a risk-benefit perspective



SOURCE: Chart is adapted from references 12 and 14.

(15,16). It seems clear, however, that the careful screening of participants that is required seriously limits the general applicability of the rapid smoking approach.

Less stressful alternatives to rapid smoking are being sought, and a procedure known as regular-paced aversive smoking (RPAS) has received attention. Specifically, in this aversive smoking approach, a slower-paced puffing tempo (1 puff every 30 seconds) is taught, but the same context and emphasis is maintained as in the more stressful rapid smoking approach. Initial results indicate that RPAS is as effective as rapid smoking in producing abstinence at program termination. Unfortunately, the relapse observed during long-term followup is somewhat greater. Research is continuing to ascertain how various self-management strategies might be combined with RPAS to encourage a more enduring pattern of behavioral change.

Aversive approaches to smoking control emphasize only one side of the solution—they help the person to avoid smoking. They do not adequately provide the novice ex-smoker with substitute skills to help him or her actively resist relapse. The development of a repertoire of substitute or nonsmoking skills is a positive approach to becoming an ex-smoker and one that has received considerable research attention under the title of self-control or self-management. One final point, the control of cigarette smoking is perhaps best viewed as an example of self-control, since it is behavior that is approved, modeled, or tolerated by most people, and its deleterious consequences are predominantly distant or removed from immediate experience (17).

A variety of self-control approaches have been devised, emphasizing (a) situational controls (for example, managing one's environment to facilitate smoking cessation), (b) self-congratulatory statements or cognitions (thoughts) when smoking is controlled, (c) punishment for smoking (for example, forfeiture of a financial deposit), and (d) reinforcement of alternatives to smoking. Even though these programs have included some of the most innovative methods to date (such as smoking at random intervals cued by pocket timers, the use of locking cigarette cases, and the forfeiture of financial deposits to organizations identified by the smoker as "most hated"), few of these innovations have been found to be effective by themselves (12). A number of these self-control strategies have also been combined in the hope that together they might have a beneficial synergistic effect, but this hoped-for result generally has not been realized (12,18).

More promising are the so-called broad-spectrum

behavioral programs that combine aversive smoking and self-control components. In these programs, the smoker is helped to stop smoking through aversive smoking experiences and then is encouraged to remain an ex-smoker by practicing a set of self-control strategies for overcoming lingering urges to smoke. A number of studies of broad-spectrum programs suggest that this more comprehensive approach may be fruitful (11,18).

An important, but only lightly investigated, feature of behavioral programs for smoking control is the format used for delivering program instructions. In most self-control programs, a manual provides step-by-step instructions while also serving as a permanent guide. Although the efficacy of programs using a manual and self-help generally has been incompletely documented, this line of program development is viewed as critically important (19). Moreover, the availability of comprehensive behavioral programs in manual form, for example, those of Danaher and Lichtenstein (18) and of Pomerleau and Pomerleau (20) facilitates the implementation of programs based on our current research knowledge.

Other communications media have also been developed for delivering smoking control program instructions. McAlister (21) found that a videotaped smoking control program that served as the basis for a class directed by a paraprofessional was as effective (at least in the short run) as a more costly quit clinic directed by a trained consultant. Danaher and associates (22,23) found that audiotapes for practicing relaxation and for regular-paced aversive smoking could be used to reduce the contact time of participants with program staff. Finally, Dubren (24) reported that a telephone answering system could be programmed to provide maintenance messages to participants in a previous quit clinic.

As noted earlier, these programs using various communications media can often be applied as adjuncts in a traditional quit clinic or class context and will reduce unnecessary contact time with the program staff. More exciting is the fact that such approaches can be used in innovative self-help formats in which professional contact time is held to an absolute minimum. In both cases, programs using communications media materials can reduce overhead and improve the cost-effectiveness of smoking cessation programs, as has been urged by Green and associates (25). Perhaps most significant is the fact that media materials can be used to reach out to those smokers in the population who would not attend a smoking clinic (26).

Physician counseling. Interventions by personal physi-

cians have been suggested for a variety of health behavior problems. The rationale is usually that health-risk information and a few carefully chosen suggestions from a physician can be very effective. Lichtenstein and Danaher (27) have provided a useful schema for examining the physician's potential role in encouraging smoking cessation, for example, acting as a model, supplying information, issuing admonishments, facilitating referrals, or directly managing an intensive program for smoking cessation.

Pincherle and Wright (28), who examined the efficacy of physician advice delivered during annual physical examinations sponsored by businesses, found that only 13 percent of the employees given these examinations quit smoking; 7 percent actually started smoking or increased their smoking rate in the period following the examination. Meyer and Henderson (29) found that a brief discussion with a physician about the risk of cardiovascular disease from smoking resulted in only 3 of 14 employees abstaining from cigarettes at followup. These authors found, however, that discussion with a physician was as effective as more intensive counseling focused on modification of multiple cardiovascular risk factors.

The best results with physician advice in smoking control have been associated with smokers who have recently experienced a myocardial infarction. The least impressive results are traced to programs that have been directed at persons taking part in routine physical examinations without having any presenting complaint (27). Compared with more intensive approaches, physician counseling will probably produce less impressive absolute changes in smoking behavior. However, its cost-effectiveness should recommend it in many settings, and it should provide useful assistance to a great number of smokers (30).

Proprietary program. Commercial interest has grown in setting up fee-for-service smoking control programs targeted at the general community and occupational settings. Representative examples of these proprietary or commercial programs have been reviewed comprehensively by Schwartz and Rider (13). If we take this source as a guide, we find that by far the greatest effort to date in this area has come from SmokEnders (31). The SmokEnders program follows a highly structured format in which a gradual reduction in smoking is encouraged, followed by sessions devoted to reinforcement. References in the SmokEnders' promotional literature and statements by J. Rogers, the organization's co-founder (cited by Schwartz and Rider (13)),

claim a success rate of almost 90 percent. In more objective assessments reported in the literature (32), less than one-half the claimed level of long-term success was found. Schwartz and Rider (13), who examined these data more conservatively, reported a 27 percent abstinence level. For the most part, proprietary programs have followed a group treatment model and have used the strategies outlined in the research literature. Unfortunately, these programs have also displayed a reluctance to permit any careful, outside evaluation of their effectiveness.

Nonprofit programs. A number of community organizations and foundations have participated in smoking control programs. Perhaps the most widely known is the quit clinic provided through the American Cancer Society. The ACS program, which has been offered to thousands of smokers, follows a three-step sequence or approach, namely (a) self-appraisal and insight development, (b) practice in abstinence under controlled conditions, and (c) a maintenance phase. In one of the few existing outside evaluations (33), 29 ACS clinics were studied. Abstinence rates based on all participants were 30 percent at 6 months after the programs, 22 percent at 12 months, and 18 percent at 18 months.

Current Occupational Smoking Control Programs

Physician counseling. A number of businesses have chosen to emphasize the physician counseling approach to smoking cessation, that is, at annual or biennial company-sponsored physical examinations the physician is encouraged to comment on the employee's need to quit smoking and then to offer personal advice or suggestions to the employee. E. I. DuPont De Nemours, for example, has planned to use this approach with its employees, perhaps supplementing it with booklets and filmstrips. One significant and often overlooked advantageous feature of the physician model is that it is relatively unobtrusive. Because the health and medical recommendations of the physician may not be perceived by the employee as being an order directly from management, the employee may be less inclined to regard them as an intrusion into his or her personal life and habits.

Outside consultants. A large number of businesses are sponsoring outside consultant groups to help their employees stop smoking. Some have simply announced the availability of smoking cessation programs, while others have even helped to defray some or all of the costs of participation in such programs. For example, Eastman Kodak and parts of Western Electric, General Foods,

and Xerox have used this referral approach. Others have invited consultants into the business setting to conduct onsite programs. Companies following the consultant-at-the-work-site model include Campbell Soup, American Telephone and Telegraph, Johns-Manville, and Boeing Aircraft. In many cases, the consultant group has been SmokEnders, although Seventh-Day Adventist and American Cancer Society groups have also been used.

Perhaps because the use of outside consultants removes a sense of personal responsibility for program evaluation, few businesses have systematically examined the efficacy of these approaches beyond informal personal reactions and anecdotal feedback. However, there are exceptions.

Example. The Campbell Soup Company (Camden, N.J.) developed a working agreement with the Center for Behavioral Medicine at the University of Pennsylvania to conduct a series of smoking cessation classes. The consultant in this instance was a seasoned clinical assistant who had prior experience in programs based on recently published core materials (20). The model was one of providing a service, collecting data, and training the staff at the business so that inhouse programs could be carried out. Participants and the company split the fee of \$50 (\$20 to \$30). To date, three small groups (N=36) have been organized and at the 6-month followup, 25 percent of participants were found to be abstinent. Additional programs are planned.

Example. Boeing Aircraft sponsored an inhouse program, conducted by the Seventh-Day Adventist Church, for 35 people. Questionnaire results obtained from 27 participants (77 percent) showed that 50 percent were abstinent at the end of treatment, while only 30 percent were not smoking at the 3+ month followup.

Inhouse programs. Smoking cessation programs can be offered as part of a company's health education or occupational health program. It is in discussion of the approaches taken in these inhouse programs that the greatest variety and innovation can be found. The available reports can be roughly grouped as describing (a) group training in skills and educational programs, (b) incentive programs, and (c) prohibitions on smoking.

Group skills and educational programs usually follow a format similar to that provided by the quit clinics (both commercial and voluntary organizations). A number of businesses have offered employees quit clinics (for example, the Ford Motor Company, and the Campbell Soup Company), and a number are contemplating an expansion of their smoking cessation activ-

ities to include inhouse programs (Boeing Aircraft Company and the Xerox Corporation).

Example. The Ford Motor Company World Headquarters began a systematic effort to set up an effective inhouse smoking cessation program through its corporate health education program. A pilot study was undertaken to test the efficacy of various self-help formats. Approximately 40 percent of the smokers involved in the corporate cardiovascular risk intervention program were invited to participate. Self-help groups were formed composed of colleagues and friends who shared an interest in using one of three methods: regular-paced aversive smoking and self-control (26 persons in 6 groups), abrupt withdrawal with contingency contracting and self-control (22 persons in 4 groups), or gradual withdrawal using contingency contracting and self-control (10 persons in 4 groups). Each group elected a leader who helped see that the weekly agenda topics were covered and that subsequent meetings were scheduled. The materials for the program provided by Ford were in workbook form and included strategies and procedures from the behavioral program outlined by Danaher and Lichtenstein (18). Audiotapes also were used to increase the cost-effectiveness of the program.

Partly because of the participants' limited contact with Ford's health education office, unexpected difficulties were encountered in collecting data. At termination of the program, the greatest reduction in smoking was found among persons who had been in groups using the aversive smoking approach. At a 6-month followup assessment, 20 percent of this program's participants were not smoking.

A number of conclusions were drawn from this study, namely, that (a) a wider range of smoking cessation opportunities should be made available, including face-to-face quit clinics; (b) more preparation and effort are required to accomplish a more satisfactory data analysis, and (c) more efficient operation would be achieved by offering a structured readiness program that would allow employees to examine their personal smoking habits without the pressures to abstain. These expanded plans were to be tested in 1979 at another Ford Division plant.

Incentive programs, that is, smoking cessation programs in which company-sponsored monetary awards are systematically used to encourage nonsmoking, have proved popular. Recent reports appearing in national publications such as the Wall Street Journal (34), the Los Angeles Times (35), and Business Week (9) have indicated widespread use of, and apparent success with, incentive programs. To date, the majority of programs of this type appear to have been sponsored by smaller businesses, for example, an ambulance company (36) and a cosmetics firm (35). Criteria for rewards can be either not smoking while at work or more complete abstinence. A careful search failed to uncover any programs in which an incentive approach was combined with opportunities for training in nonsmoking skills.

Example. The Texas operating division of the Dow Chemical Company instituted an innovative smoking cessation program after it discovered that workdays lost by smokers cost the company an estimated \$500,000. A 1-year program was undertaken in which lotteries and financial awards were used. In one lottery aimed at smokers, every month of non-smoking earned the novice ex-smoker one chance to win a boat and motor valued at \$2,400. In the other, strictly monetary contest, weekly \$1 bonuses were offered for abstinence, as well as a chance to win a \$50 bonus quarterly. The second lottery was aimed at recruiters, employees who would encourage smokers to join the quit program. A recruiter earned one chance toward a boat and motor prize for every month of non-smoking that was reported by one of his or her recruits.

Almost 400 employees (24 percent of the smokers) were recruited, and at the end of the program an impressive 76 percent were abstinent. Even though enthusiasm over these results must be tempered by the lack of followup data and objective measures that would corroborate self-report, the Dow Chemical Company program illustrates how incentives can be used to promote both recruitment and significant changes in smoking behavior.

A blanket prohibition disallowing all smoking at work is the most restrictive approach to smoking cessation in the occupational setting. In some cases these prohibitions stem from historical precedent, as was the case with the Campbell Soup Company (9). Other, more recent instances of the prohibition approach are based on evidence of an association between certain occupations and smoking behavior (37) and on the synergistic effect of smoking and occupational exposure on cancer (10).

It should be noted that complete prohibition of smoking need not be the only approach used when there is potential exposure of workers to occupational carcinogens. The Tyler Asbestos Workers Program, for example, emphasized both health education and physician counseling (38).

Enlightened businesses that prohibit smoking also appear to provide employees easier access to special smoking cessation programs. For example, the Johns-Manville Company prohibits all smoking because of potential asbestos exposure, but it follows a policy of first offering opportunities for its employees to attend SmokEnders clinics. Effective smoking cessation programs are complementary to—not substitutes for—efforts to reduce environmental exposure to harmful ingredients in the workplace.

Example. Johns-Manville initiated its aggressive anti-smoking drive by banning smoking in two plants, one in

Massachusetts and one in Texas. Violation of the ban occurred at both sites and produced disciplinary actions. In both instances, the local union filed a grievance, and arbitration decided in favor of the employee in one case and in favor of the company in the other. From experience gained in these early encounters, the Johns-Manville Company has developed a five-point approach to converting plants from smoking to nonsmoking status: (a) health information, (b) meetings between local management and union representatives, (c) presentation directly to employees of the rationale for not smoking, (d) encouragement for workers to attend partially subsidized smoking cessation classes and, finally, (e) institution of the smoking ban. In another company decision, a hiring policy requires all future workers to be nonsmokers. The ban was scheduled to be in effect by 1979 in all plants and to encompass a workforce of about 8,000 employees (39).

Restrictions or reinforcement plans aimed at encouraging employees to stop smoking at work may not produce all of the results desired. People can learn to manage their smoking so that it only occurs outside of work settings. In fact, Meade and Wald (40) recently cited data for more than 2,000 workers in a British food processing factory showing that when prohibited from smoking at work, they made up for lost time by smoking more during other hours. These authors concluded that “it is obviously possible that restrictions on smoking at work may influence total daily consumption, but our data provide no clear evidence of this.” Risks from second-hand smoke may be relieved by smoking restrictions (41), but there may not be as significant a beneficial effect upon the risk of premature morbidity and mortality or any reduction in workdays missed.

Recommendations for Cessation Programs

From the research literature cited earlier in this report, we know that even when a participant achieves success in a smoking cessation program, the odds are 7 out of 10 that he or she will relapse before 3 months have passed. The meager results available for the programs that have been offered in the business setting do not appear to diverge dramatically from this benchmark level. In making recommendations, then, consideration needs to be given to the empirical perspective fostered by social learning theory, which has proved useful in research on smoking behavior.

The empirical perspective, of course, demands the thorough collection and analysis of evidence. In most cases, data are difficult to obtain when programs are turned over to outside consulting firms; this problem may be most acute when the business deals with pro-

prietary programs. The needed research and development in this burgeoning field will require access to outcome data—possibly best accomplished through inhouse approaches.

Too often, skills-training programs in occupational settings appear to be based on models that are imported from the smoking clinic, and they are only minimally sensitive to the unique features of the business setting. As Chesney and Feuerstein correctly noted (42), onsite programs in business settings reduce the considerable personal costs (lost time and transportation difficulties) associated with clinic-based programs while allowing more opportunity for careful monitoring and followup than offsite programs.

Contingency or incentive programs have apparently taken advantage of the unique features of the work setting. However, the omission or underemphasis of skills-training opportunities shows that these programs are based on the naive assumption that smokers require only added motivation to be able to quit. What appears to be needed is careful examination of motivational and skills training approaches, both separately and in combination.

As mentioned earlier, occupational programs present a unique opportunity to maintain contact with people over an extended period, and continuity of contact may be an important ingredient in facilitating enduring abstinence (42). Informal group meetings might be made available to participants who have completed prior programs but find, for whatever reason, that they need to renew their enthusiasm for not smoking. Moreover, these maintenance meetings could be open to all novice ex-smokers in the workforce, no matter where or how they achieved cessation. (Availability of a lending library of printed and audiotaped materials would be one cost-effective step in this direction.)

The survey data strongly suggest that most smokers prefer to quit without any formal help. A comprehensive program, then, should be designed not only to help people quit but also to help all workers resist relapse. Anti-relapse programs would include behavioral self-control methods for overcoming lingering urges to smoke (18).

Another innovative direction deserving of more attention is the comprehensive wellness approach. In this expanded context, smoking becomes just one element in a multi-component program aimed at stress reduction, blood pressure management, exercise enhancement, diet control, weight management, and so forth. The multi-target approach assists in recruitment of

participants for smoking control programs and may be uniquely suited to encouraging the adoption of a repertoire of nonsmoking substitute behaviors (43).

Recruitment of participants for smoking cessation programs remains a largely unexplored area of key importance. The optimal manner of announcing or publicizing smoking cessation programs has not been determined. One promising idea used by the Campbell Soup Company is to hold a health fair in which attention is focused on many aspects of personal health. Recruitment for smoking cessation programs might be enhanced if there were a way to provide some personal assessment of a person's risk status, as in cardiovascular risk (29), through the Health Hazard Appraisal method (44), which the Center for Disease Control of the Department of Health, Education, and Welfare planned to use in an employee program, or through providing employees feedback information on carbon monoxide tests, as was done at a Blue Cross facility. Recruitment might also be greater if a variety of smoking cessation methods were made available, including group clinic programs, self-help groups, and individual self-help materials. The availability of attractive and effective smoking cessation programs over a period of several years would probably improve recruitment simply because of word-of-mouth communication (45). Readiness programs similar to the one noted in the discussion of the Ford Motor Company's program might be another way to involve people who wish to assess their own personal interest in participating in a smoking cessation program. Finally, the incentive approach used by the Dow Chemical Company could encourage a more exhaustive recruitment effort.

A final, and I hope, a resounding point is that additional attention must be focused on careful program evaluation. Even though thousands of programs are apparently being devised for the control of smoking in occupational settings, I found only a few examples of careful evaluation of such programs. Program evaluations must include data on the number of persons recruited (with the percentage of the employee group that is of interest), the proportion of these recruits who have completed the program and their performance (that is, percentage who are abstinent), and the success with which this group maintains nonsmoking status over the course of followup (at least 6 months after completion of the program). Followup assessments require preparation and resources if they are to be complete records of outcome. They are a necessary ingredient of a data-based program. Self-reports, particularly under the conditions found in incentive programs, require validation through the available chemical tests of

expired air carbon monoxide or plasma thiocyanate (46).

Manpower for programs in occupational settings can be obtained from a number of sources. Boeing Aircraft Company, for example, has established a program in which University of Washington seniors majoring in health studies participate in various aspects of the planning and implementation of smoking control programs. Graduate students from schools of public health represent another talented, but largely untapped, resource.

The programs used as examples in this report might be thought of as prototypes. As with all prototypes, they are rough approximations of the final product. The process of refinement and development requires testing (data collection) and replication. Certainly there will have to be greatly expanded support for the assessment, as well as for the innovative development, of prototype smoking cessation programs. A report on the status of smoking cessation programs 5 years hence will have to include considerably more evidence as to the effectiveness of competing models and about the criteria needed for determining the most appropriate match between a program and a business if the occupational setting is to fulfill its promise as an exciting arena for carrying out meaningful preventive health programs.

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SYNOPSIS

DANAHER, BRIAN G. (University of California, Los Angeles, School of Public Health): *Smoking cessation programs in occupational settings, Public Health Reports, Vol. 95, March-April 1980, pp. 149-157.*

For reasons of health and economics, the business community is displaying a growing interest in providing smoking cessation programs for employees. An examination of the current research on smoking cessation methods has revealed a number of promising directions that smoking cessation programs can take, for example, aversive smoking

approaches combined with self-control strategies. A review of current smoking cessation programs in occupational settings revealed some emphasis on physician counseling, but a relatively greater emphasis on use of consultants (especially in proprietary programs) or of contingency programs to encourage nonsmoking.

The smoking cessation programs in businesses can move in a number of innovative directions, including (a) increased use of inhouse programs with a variety of smoking cessation strategies; (b) greater emphasis on the training of program participants in nonsmoking be-

havioral skills, combined with contingency or incentive programs for smoking control; (c) vastly improved research methods, including complete followup assessments of program participants and chemical tests to validate their self-reported abstinence; (d) greater concern about the need for empirically tested procedures for recruitment of participants for the programs; and (e) expanded interchange among behavioral scientists (especially behavioral psychologists), health professionals in occupational health and medicine, union and employee groups, and management.