CHAPTER ONE

SHIFT WORK

1.1. CONCEPT

Under the Factories Act of a country 'shift work' may be found as an approved practice for employing labour force in certain production-oriented work situation, for a prescribed limit of duty hours, to keep the flow of production uninterrupted. This well-known mode of employing work-force by the management in production oriented organisation is expected to serve basically two major objectives, viz., (i) improvement of industrial efficiency of the workers under employment; and (ii) achievement of the target of production of the industry concerned. The practice of shift work shows different characteristic features in order to meet the needs of work-situation and work-force under employment. Under the approval of the Chief Inspector of Factories of a state, the practice of shift work may be with permanent workers to work under rotation, there may be more than two shifts operating in a day, there may be temporary or casual labour for shift work in a particular season, and other variations for the cause of industrial growth.

Broadly speaking, there are two major modes of 'shift work' practices, viz., (i) fixed schedule of shift, and (ii) rotating or altering schedule of shift. In fixed schedule when a batch of workers ends operation and another fresh batch starts usually the flow of work maintains a continuity, failing which the production gets seriously hampered, irrespective of holidays. There are production plants or work-situations where the shift practice follow a semi-continuous flow of work following a break at the week-end, only. In both
cases of continuous and semi-continuous modes of operation, the production plant remains alive for 24 hours for uninterrupted flow of production, or until cessation of flow is directed. In the rotating shift practice the batch of workers for a particular shift is usually changed to a different shift, i.e. from morning shift to afternoon shift or night shift without affecting the continuity or semi-continuity in the flow of production. But there are instances where a production plant may be found to remain alive only 8 hours a day or less than that to meet the requirement of piece-rate production. Here the batch of workers stop the work each day, irrespective of holiday, and start afresh next day without depending last day's of work. Under such circumstances same batch of workers, permanent or casual, are employed for discontinuous flow of production in a factory or production establishment.

International Labour Organisation (1978) has prescribed a basic difference between discontinuous and continuous modes of plant or factory functioning with respect to employment of shift workers keeping in view of major physiological limits of men at work - being conditioned or habituated with diurnal rhythm of waking and night-time sleeping. Under discontinuous two-shift schedule a worker enjoys the scope of usual night-time sleep, whereas under continuous or semi-continuous three-shift schedule a night-shift worker can enjoy the scope of day-time sleep only - which may be his permanent arrangement or may remain open to rotation or alteration of shift placement.

Factory workers or employees working in a production plant usually get overtime work opportunity to meet production requirement upto a prescribed amount of time in a week when the work schedule is discontinuous two-shift
in nature, as a rule. Under semi-continuous rotating shift schedule the frequency of rotation varies after the nature of production and need of plant-functions, ranging from one week to one month cycle for the change of shift, mainly. But under continuous rotating shift schedule the said frequency may vary from two days to a fortnight in most cases. The method of rotation may normally place the 'morning shift worker' to 'afternoon shift' and then to 'night shift' and repeat the sequence in cyclic order, while the span of placement of a batch of worker in a particular shift remains fixed. But there are work situations where just the reverse of the above normal rotation procedure is followed, i.e., from night shift to afternoon shift, from afternoon to morning shift, and from morning shift to night shift.

1.2. The advantages of the introduction of shift work schedule in industries are mainly four-fold. They are:

(i) Target-centered production.

(ii) Widening employment opportunity.

(iii) Maximum use of plant machineries with minimum overhead cost and capital investment for the purchase of more sets of similar type of costly machines.

(iv) Keeping the plant-community-life 24 hours lively by activity and providing the workers round-the-clock social service like medical care, transport, security, food, etc.

Researches on the economics of shift work practice have provided convincing evidence in favour of the practice (Harris, 1964; National Board of Prices & Incomes Report, 1970; Bosworth and Dawkins, 1981). For technical reasons, where uninterrupted production process has to be maintained there shift work schedule cannot be avoided. At present such type of industries,
which are concerned with iron and steel production, chemical and pharmaceutical production, paper and jute production, mineral production, mainly, are introducing automation as an essential adjunct to keep the flow of production uninterrupted. Carpentier and Cazamian (1977) have observed a high positive correlation between 'continuous shift-work need of an industry and the utility value of automation of production plant with reference to size of industry and efficient manpower management for targeted production.'

According to Fishwick and Harling (1974), ratio of labour to capital cost, discontinuity of production for the maintenance of machines or repairing breakdown, complexity of inventory and production control, stability of production requirements, and need for continuous operation of a plant for technical reason may be considered as important determinants for continuous shift work schedule. The need for spreading shift work has been advocated for economic growth of an industry, i.e. capital investment, price factor variations, demand and production elasticity, employment, etc. (Alexander and Sparos, 1956; Winston and MacJoy, 1974; Bosworth and Dawkins, 1981).

By analysing the sickness cost and incidents of premature death several researchers have indicated how society meets the liabilities caused by the shift workers which remains unaccounted for in the balance sheet of the industries concerned (Landler and Vieux, 1976; Hallot, 1977). Evidence in these observations speak more of technological need for shift work schedule than true humane or social welfare need (Savall, 1980). Shift workers have to cope with different types of social life problems under varying situational contexts of social life and for overcoming them a good amount of unforeseen expenditure
or even irrepairable loss may take place. In brief, the human-approach research findings suggest that participation in the continuous shift work schedule is not equally beneficial to all workers concerned (Colquhoun, et al., 1975; Rutenfranz and Colquhoun, 1978; Khaleque and Rahman, 1982, Reinberg, 1981; Johnson et al., 1981).

1.3. The concept of a 'risk factor' in shift workers' social life had been highlighted by Rutenfranz (1967), which emerges out particularly when the shift-work schedules involve working and living quite divergent from the usual diurnal rhythm. The requirements of some industrial establishments and their scheduled hours of shift work are conducive to unconventional rhythms of nucleus-family life, irrespective of social class or community. The untold material prosperity that the developed countries are enjoying today, through technological changes of last few decades, has been possible only at the cost of social and psychological harmony of the workers spending hours in risky job environments while undermining family need and welfare (Shipley, 1979).

By reviewing the shift work schedules of local industries the present investigator has observed that the scope of usual community life participation narrows down in case of afternoon shift workers more and in case of night shift workers most, in comparison to morning shift workers. Again participation of female workers in the morning shift and, as well, in the night shift create several unmanageable family problems. Lack of parents' company and vigilance in most cases affect the healthy socialisation of the children and in some cases even lead the children to become the victims of gang life, conducive to deviancy or wayward habits detrimental to mental health.
One of the decisive factors behind the health problems of night shift workers lies in the conflict between the required biorhythm of the duty hours and well-acclimated or habituated biorhythm of the individual worker - it is really difficult to decondition and recondition hunger, sleep, and sex needs' rhythm for satiation in a socially approved manner in order to respect fully the shift work schedule. Where the said conflict remain unsolved for a long time there health and temperament of the worker become negatively affected and ultimately he loses his worth and efficiency. Prolonged accumulated tension in the physiological system of an individual disrupts his homeostasis, causes dysfunction of his autonomic nervous system, and makes him a victim of psychosomatic disorder or functional disease or inculcate several defensive symptoms for overcoming bad effects of frustration.

In the light of the 'shift work concept' explained in this chapter an attempt has been made to overview certain aspects of shift-work research literature in order to prepare the background and rationale to justify the need for present investigation in the following chapter.