DECISION OF THE APPEAL DIVISION

2002-0558

March 1, 2002

RE: Appeal Division Reference #2002-0558

Panel Appointed:
Glen W. Bell
Steven Adamson
Teresa White

Introduction

(1) The Workers' Compensation Review Board allowed the worker's appeal from the decision of a Board officer not to accept his claim for necrotizing fasciitis. The employer appeals from findings of the Review Board, which are dated May 28, 2001.

Issue(s)

(2) The issue in this appeal is whether the worker's necrotizing fasciitis of March 1998 was due to the nature of his employment.

Background

(3) The worker, Mr. F [not his real initial], was employed in a cement products fabrication factory. In March 1998 he had been employed there for about three years, including some lay-off periods. Most recently he had been called back to work on March 9, 1998, after a four-month lay-off. His duties in March 1998 were primarily operating a pallet jack to move recently molded concrete slabs. He also had contact with the wet cement on a regular basis: he used his hands to smooth the edges of wet slabs; he was also involved in clean-up at the end of the day which involved contact with cement dust. Although he wore gloves, they were not rubber gloves, but cotton, and his hands would be exposed to the wet cement. Mr. F had a long history of chronic eczema on his hands for which he was using a cortico-steroid cream.

(4) On March 25, 1998, at about noon, he was engaged in moving cement slabs when he noted that his right hand was painful and starting to turn blue-red and swell. By 2:00 p.m. his hand was very swollen and he was feeling flu-like symptoms. He went home and rested. That evening he started to develop pain up his entire right arm into his shoulder and chest. The next day he sought medical attention, and his family physician diagnosed his condition as delayed onset muscle soreness. [It is not uncommon for the early signs of the disease to be misdiagnosed.] Mr. F deteriorated rapidly and was admitted to hospital on March 27, 1998. He was diagnosed with necrotizing fasciitis and underwent two surgeries to remove the diseased tissue from his axilla, chest and

throat. He was released from hospital on April 17, 1998. The bacteria which caused the disease was identified in tests as Group A β-Haemolytic Streptococcus.

The Investigation and Adjudication of the Claim

(5) Mr. F applied for compensation. The Board officer sought advice and information about the disease and how it was caused. At an early stage of the investigation, a Board Medical Advisor advised that there was a possibility of a work relationship if the onset of the condition coincided "with some injury, i.e. laceration, chemical burn from cement dust."

(6) The Board officer obtained medical literature on necrotizing fasciitis (RJ Green et al., "Necrotizing Fasciitis", CHEST, July 1996, p. 219). With respect to the etiology of the disease, it states:

> Introduction of the pathogen into the subcutaneous space can occur via any disruption of the overlying skin, such as a cut, abrasion, burn, laceration, contusion, bite, injection, or surgical incision.

(7) He also found a reference in a textbook, which stated, "While the portal of entry is thought to be a cut or even a surgical wound it may be difficult to pinpoint the site of entry." (Rook, et al., *Textbook of Dermatology,* p. 1020)

(8) The Board officer accepted that there could be a work relationship if it were shown that the infection "began secondary to a break in the normal skin barrier protection, i.e. through laceration, injury or burn." (Memo, April 15, 1998)

(9) Later the Board officer also asked the Board Medical Advisor as to the existence of any guidelines with respect to causation in cases of this disease. The Board Medical Advisor replied (May 22, 1998):

> I am sure the WCB has no guidelines.
> I doubt that his work can be implicated unless it can be shown that his work was the source of the infecting agent. One could speculate that it was due to spread of a secondary infection of a work caused dermatitis, but I doubt this could be justified as the probable cause.

(10) Later the Board Medical Advisor concluded that the worker had not "sustained an injury to his skin that subsequently became infected, so it does not look as if there is a post-traumatic infection." (Memo, May 29, 1998)

(11) The adjudicator could not find evidence of a cut, scratch or chemical burn. He also considered the fact that a dead bird had been found in the cement was not likely a

source of infection. He concluded that there was insufficient evidence to link the disease to the worker's duties. By letter, dated June 3, 1998, he denied the claim. However, he referred the file to Occupational Disease Services for review. Mr. F appealed the decision.

(12) The worker then submitted a fresh medical report which stated that there was a work connection:

> Mr. [F] asked me two questions. The first one is whether the necrotizing fascitis is work related. <u>It appears that he developed contact dermatitis as a result of exposure at work and this led to an open wound which ultimately led to the infection.</u> The necrotizing fascitis occurred probably as a result of his job.
>
> (Dr. Y, June 29, 1998)
>
> [emphasis added]

(13) A further opinion was sought from a (different) Board Medical Advisor (July 10, 1998). With respect to the secondary infection of a work caused dermatitis, he concluded that there was no history of a work-related injury and that there was no evidence of eczema (a type of dermatitis) at the time of the onset of symptoms. He based his conclusion partly on discussions he had with the worker's family physician (who had initially diagnosed delayed onset muscle soreness) and a physician Mr. F had consulted regarding his eczema in January 1997 (Dr. H). The family physician said that he had not examined the worker's hand for a skin problem at the time. Dr. H had described the eczema condition in January 1997 as "not bad". The Board Medical Advisor concluded that, although Mr. F had a significant rash in the past, it was unlikely that he had had any in the past year. He too noted that the worker would have been wearing gloves most of the time.

(14) He went on to say that, even if one were to accept that the worker had eczema, which provided a portal of entry for the bacteria, "one doesn't know when and under what circumstances such would have occurred – it could have occurred any time within a few hours to a couple of days prior to midday March 25."

(15) As for the presence of an infectious agent (or pathogen) at the workplace, he concluded that the worker would have been at no greater risk than the general public. He also did not believe that cleanliness in the workplace would be factor, since the disease affects persons who are not in "dirty" places.

(16) The Board officer accepted this opinion and again denied the claim. The date of the decision letter was July 22, 1998. Mr. F appealed this decision to the Review Board too.

(17) Mr. F submitted additional information to the Board officer, including his hospital records and prescription bills, to show that his eczema condition was flaring up at the onset of the necrotizing fasciitis. He also described an incident which took place about two weeks before, in which he had broken the skin of his knuckles on his right hand while working. After further investigation, including a site visit, the Board officer found that there was insufficient evidence that Mr. F was suffering a flare-up of his eczema condition on the date of onset, or that he had injured his knuckles as described. The medical reports on file did not support a finding that the worker had unhealed wounds on his knuckles just prior to contracting the disease. Mr. F had also submitted evidence as to the general unhygienic conditions at the factory, but the Board Medical Advisor said that this would not indicate that streptococcal bacteria were more abundant at the workplace than anywhere else. The request for reconsideration was again denied (February 8, 1999).

(18) Mr. F also appealed that decision to the Review Board.

(19) In the meantime, the file had been referred to the Board's Prevention Division. Its perspective would cast a different light on the case. An Occupational Physician in that Division reviewed the file and wrote a memo (July 29, 1998) giving her impression of the case. One of the purposes of the memo, she stated, was to "offer an occupational health medical opinion based on knowledge and experience of the cement/concrete industry". It is useful to set out her view in detail:

> The worker suffered from a bacterial infection, originally affecting his right hand, causing a necrotizing fasciitis. This disease usually is caused by infection of an area (e.g. skin) having previously undergone <u>trauma (thermal, chemical or mechanical) which is often of a minor nature</u>.
>
> . . .
>
> <u>Streptococcus is not in itself a health hazard associated with the cement/concrete industry, but skin conditions which could render a worker more susceptible to this bacteria, are common in this type of work</u>. It is not my intention to enter into the debate of whether Mr. [F] did or did not have occupational dermatitis with open sores on his hand immediately preceding the infection. It would appear, however, that this is the issue on which the adjudication of this case rests.

(20) She then set out her understanding of the applicable adjudication criteria:

To summarize, the work-relatedness of this case depends on:

- the state of Mr. [F]'s skin at the time of onset of the infection
- if the condition of the skin was abnormal, whether or not the cause of the skin abnormality was work-related

(For the purposes of adjudication, identification of the source of the streptococcal bacteria is not important, any more than would be identification of the exact source of any other bacteria causing secondary infection of an occupational contact dermatitis.)

(21) The Occupational Physician seemed to agree with the first Board Medical Advisor and the adjudicator that a claim could be established if there was a work-related skin injury (dermatitis) which led to the infection. The source of the bacteria would not in that case be relevant.

(22) Her memo continues with a discussion of the effects of exposure to cement:

> In Mr. [F]'s letter to [his MLA], he states, "I have eczema on my hands and have had it for many years. But the chemicals used in the concrete to make it harden quickly, causes [sic] my hands to callus, crack, and break into open sores". This description is consistent with known common effects of contact with cement and concrete and its additives. From the enclosed information sheet, it should be noted that skin effects can be extremely severe, sometimes causing third degree burns, requiring skin grafting. Although the employer stated that protective clothing in form of gloves was worn, this will usually not afford 100% protection and, sometimes, can worsen the situation, especially if he insides of the gloves become contaminated with wet cement or concrete.

(23) She concluded by stating that a more comprehensive medical history and skin patch testing would be required to determine Mr. F's hand condition. However, she expressed the opinion that "the probability of his dermatitis being caused (or partially caused/aggravated) by his work is at least 50% . . ."

(24) An inspection of the employer's premises took place on August 4, 1998. The Board inspector was accompanied by the Occupational Physician. They noted a number of relevant features of the workplace: Although the workers wore gloves for the cleaning operation, the gloves all had concrete dust in them; hygiene facilities were "rudimentary", consisting of an outside cold water tap, some liquid hand cleaner and a dirty towel; the toilet was a portable outhouse; there was no separate eating area; the building was unheated. The inspector and the Occupational Physician also had a

discussion with the employer. Reference was made on several occasions to Mr. F's hands having open sores, a statement that the employer at no time challenged.

(25) The worker submitted a further medical report from Dr. A (September 3, 1998). He expressed the view that Mr. F acquired the disease because of poor working conditions and an unhygienic environment leading to skin irritation.

(26) The new information submitted by the worker, the opinion of the Occupational Physician and the findings of the inspection had no effect on the Board's decision. Neither did that of Dr. A. A third denial was issued on February 8, 1999. The worker appealed to the Review Board.

(27) The Review Board allowed the appeal. In essence, it accepted the medical opinions which supported a causal connection between the disease and the employment. It was not clear what adjudication criteria the Review Board was applying. It could be inferred that it applied the "secondary infection" criterion. The employer appealed to the Appeal Division.

Law and Policy

Criteria for Adjudicating Claims for Infectious Diseases

(28) Infectious diseases, if they are occupational diseases, are subject to the general criteria for adjudicating occupational disease. With respect to diseases not included in Schedule B (presumption of causation), the evidence must show that the disease was due to the nature of the employment: subsection 6(1), *Workers Compensation Act*. This has been interpreted in Board policy to mean that there must be "a causative connection between the work and the disease": #26.22, *Rehabilitation Services and Claims Manual*. This does not mean that the employment must be proved to be the sole cause. What is required is that the employment was of "causative significance" in producing the disease: *9 WCR 123 (Decision No. 93-0067/0068)*.

(29) As the Board Medical Advisor noted, there are no guidelines in Board policies specifically governing the adjudication of infectious disease claims. In particular, there are no criteria for determining whether an infectious disease is due to the nature of employment, i.e. causation. These must be inferred from other policies and the legislation.

(30) A number of infectious diseases have been recognized by regulation of general application as occupational diseases. These are listed at #26.03, *Rehabilitation Services and Claims Manual*. They are not listed on Schedule B, so the presumption of causation does not apply. The list includes Streptococci Infections, which is the type that affected the worker in this case. However, the policy does not provide any

guidance as to how it should be determined whether an infectious disease was due to the nature of the employment.

(31) Policy #32.60 (Preventive Measures and Exposures) provides that, where there has been exposure to a disease or contaminant, the worker must sustain a personal injury or suffer from an occupational disease before the "exposure" can be compensable. This would apply to infectious diseases. The policy assumes that the source or locality of the exposure to the disease can be proved.

(32) However, often it will be impossible to prove that the workplace is the source or locality of the pathogen. Bacteria are transient and subject to destruction by many factors. Often they are carried by humans who are not symptomatic. If the presence of bacteria in a particular workplace is not known in advance, it can be extremely difficult and costly to try to detect it after a worker is diagnosed with an infectious disease. It might be possible in some cases to take samples from others at the workplace for testing, but even so the delay in obtaining a sample might well be enough time for the bacteria to disappear. Therefore, even if an infection is caused by bacteria which originate at the workplace, it may be a practical impossibility in many cases to find proof of it.

(33) However, this difficulty does not prevent the acceptance of a claim where it can be proved that an employment injury rendered the worker susceptible to the disease. All that must be proved is that the employment had causative significance in producing the disease.

(34) The connection between an infection and an injury is illustrated in part by policy #13.10 (Distinction Between Injury and Disease), *RSCM*:

> The following are examples of disorders classified as DISEASES:
>
> . . .
>
> 2. An infection (except when it is incidental to a compensable injury, when it is treated as part of the injury)
>
> [emphasis added]

(35) The Policy does not elaborate on what is meant by "incidental to a compensable injury". However, it makes sense to take this Policy to include the circumstance where a compensable injury renders a worker susceptible to infection. Then any such infection will be considered to be part of the injury. It does require that a compensable injury be proved to have caused the susceptibility. In such a case the absence of evidence as to the precise source of the pathogen is not determinative because the injury has "causative significance" in producing the disease.

(36) Another example of the "causative significance" principle is found in Policy #22.00 (Compensable Consequences of Work Injuries), *RSCM,* and following. It provides that compensation is not limited to the direct consequences of work accidents. It gives the specific example of disablement caused by surgery necessitated by the injury: #22.11.

(37) From these guidelines we extract the principle that applies to infectious disease claims of the type found in this case:

> If the worker has been rendered susceptible to an infectious occupational disease as the result of a compensable injury, and he or she becomes infected with such a disease, the disease will be considered to have been due to the nature of the employment.

(38) The same principle applies if the susceptibility is due to a compensable disease. In either case the employment has causative significance.

Analysis

(39) The *Workers Compensation Act* authorizes an appeal to the Appeal Division from a decision of the Review Board. The Appeal Division rehears and redetermines the matter. It may inquire into all of the issues arising out of the appeal. No oral hearing was requested in this appeal and the Panel finds the evidence on record, coupled with written submissions from the parties, to be sufficient to allow it to make a fair decision.

(40) There is insufficient evidence to support a finding that the workplace was the source of the streptococcus bacteria which caused the worker's necrotizing fasciitis. There is no evidence of the presence of the bacteria in the workplace. Although the symptoms came on while the worker was working, the actual contact with the pathogen could have occurred at any time in the previous 24 hours, more or less. The appeal must then be considered in light of the second criterion. The key factual question in this case, therefore, is to determine whether the worker experienced a work-related injury (or disease) which left him susceptible to infection by A β-Haemolytic Streptococcus.

(41) According to the literature, there must have been some defect in Mr. F's skin which acted as a "portal" for the pathogen. Where was that defect? The focus of the Board's inquiry was the worker's hand. The Board Medical Advisor found that Mr. F had not had a rash on his hands at the time of onset of the disease. However, he did not suggest any alternative "portal".

(42) In deciding the issue of the location of the "portal" it is helpful to understand the nature of the disease in its earliest stage. The Review Board referred to a "Fact Sheet" published by the National Necrotizing Fasciitis Foundation, which describes the typical

progress of the disease. Under the heading "EARLY SYMPTOMS (usually within 24 hours)", it states:

> 1. Usually a minor trauma or other skin opening has occurred (the wound does not necessarily appear infected); 2. Some pain in the general area of the injury is present. Not necessarily at the site of the injury but in the same region or limb of the body. . .

(43) In Mr. F's case his symptoms first appeared in his right hand and spread to his arm. This suggests a wound in that limb. The hand is more likely than the arm to experience skin defects; it is in constant use and is thus exposed to greater risk than the arm. This was especially the case with Mr. F, whose work required constant use of the hands. We conclude that the lesion which provided the portal of entry for the pathogen was likely on Mr. F's right hand not far from his first symptoms. In that case, how did it get there? Was it related to Mr. F's employment?

(44) Mr. F had a history of chronic eczema, a type of dermatitis or inflammation, on his hands, with regular flare-ups. He would treat the condition with cortico-steroid cream, a prescription drug. Mr. F's eczema condition and his use of hydrocortisone cream had been noted by a Board Medical Advisor in an examination conducted on July 5, 1997. The condition was also active when he saw Dr. H in January 1997. Mr. F worked in an occupation where his hands were exposed to cement dust on a daily basis. It is a substance that is capable of causing skin irritation and of aggravating an existing eczema condition. The symptoms Mr. F describes on his hands are typical of workers who have been exposed to cement dust on a regular basis.

(45) The Occupational Physician stated that the chance that the worker had a dermatitis that was caused or aggravated by his work was at least 50%. She noted that the gloves used by the workers at the place of employment had cement dust on the inside. The employer, when presented with the suggestion that Mr. F had open sores on his hands, did not challenge that statement. A co-worker, who was employed with Mr. F at the time of the onset of his symptoms and for some time before provided a letter in which he stated: "[Mr. F]'s eczema would flare up when he was working and his hands would crack or blister."

(46) The hospital notes provide a source of contemporary observations about Mr. F's condition. The emergency record made on Mr. F's arrival at the hospital on March 27, 1999, contains notes of the examining physician. According to the notes, he observed "interdigital eczema" on the right hand.

(47) We do not give much weight to the initial opinions of the Board Medical Advisors (as opposed to that of the Occupational Physician in the Prevention Division). They wrongly assumed that the wearing of gloves would provide protection from hand lesions

of all types. The interior of the gloves was in fact a source of exposure to cement dust. In addition, the Board Medical Advisors found that there was no evidence of skin irritation or lesion on the worker's hands. However, such lesions were observed by the emergency physician. Moreover, the most likely portal of entry was on the right hand. The progress of the symptoms proves this. The only issue is whether the lesions on the right hand were caused or aggravated by the worker's working conditions. The evidence shows that they were.

(48) We find that the evidence of chronic eczema, coupled with the worker's daily exposure for about three weeks to wet cement and cement dust, supports the conclusion that the eczema on his right hand was aggravated by his work activities. The aggravation was compensable. It caused lesions which made the worker susceptible to an infection of the type which caused his necrotizing fasciitis by providing the portal of entry for the streptococcus bacteria. The employment thus had causative significance in producing the disease. (The Panel is aware that by finding that the worker's eczema was aggravated it is making an original adjudication in relation to the worker's eczema. Ordinarily, the Appeal Division does not act as the original decision-maker. However, in this case such a decision is necessarily incidental to the adjudication of the main issue in the appeal, i.e. the compensability of the worker's necrotizing fasciitis.)

(49) This finding makes it unnecessary to consider whether the worker's knuckle injury provided a portal of entry and if so whether it was caused by the employment.

Conclusion

(50) The Panel concludes that the worker's necrotizing fasciitis of March 1998 was an occupational disease which was due to the nature of his employment.

(51) The employer's appeal is denied.

Glen W. Bell, Chair
Appeal Commissioner

Steven Adamson
Appeal Commissioner

Teresa White
Appeal Commissioner

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