

SUPERIOR COURT  
OF THE  
STATE OF DELAWARE

RICHARD F. STOKES  
JUDGE

1 THE CIRCLE, SUITE 2  
SUSSEX COUNTY COURTHOUSE  
GEORGETOWN, DE 19947

Timothy A. Casey, Esquire  
Marshall, Dennehey, Warner, Coleman & Goggin  
1220 N. Market Street, 5th Floor  
P.O. Box 8888  
Wilmington, DE 19899

Henry C. Davis, Esquire  
Henry Clay Davis III, P.A.  
303 N. Bedford Street  
P.O. Box 744  
Georgetown, DE 19947

RE: *Board of Public Works v. Lance M. Greener*  
C.A. No. 04A-09-001 RFS

Date Submitted: February 17, 2005  
Date Decided: May 25, 2005

Dear Counsel,

This is the Court's decision regarding the the Board of Public Works of the City of Lewes' appeal of the Industrial Accident Board's decision granting Claimant, Lance M. Greener's Petition to Determine Additional Compensation Due. For the reasons set forth herein, the Board's decision is affirmed.

**STATEMENT OF THE CASE**

The Claimant, Lance M. Greener ("Greener") was injured in a compensable work-related accident on March 11, 1998. He was employed with the Board of Public Works of the City of Lewes ("BPW") as a wastewater operator for a treatment plant. His duties included taking samples, doing laboratory work and checking pumps. During the course of his employment with BPW, Greener was exposed to chlorine and sulfur dioxide fumes apparently released from

malfunctioning water treatment equipment. Due to his exposure, Greener developed a chronic lung condition, for which he was compensated by BPW.

To treat his lung injury, Greener's doctor prescribed him a regimen of corticosteroids beginning in March and April of 1998. Some time after, Greener developed a hip injury, avascular necrosis ("AVN") of the left femoral head, which required him get a hip replacement on December 3, 2000. On April 12, 2004, Greener filed a Petition to Determine Additional Compensation Due, seeking payment for his medical expenses and permanent impairment benefits for his hip problems. Greener claims the corticosteroids caused his injury. BPW says the injury is not work-related and was caused instead by long-term alcohol use.

A hearing was held on August 27, 2004 before the Industrial Accident Board ("the Board"). The Claimant presented the deposition testimony of Dr. Stephen J. Rodgers ("Dr. Rodgers"), who opined that Greener's AVN was caused by his use of corticosteroids. Dr. Jeffrey S. Meyers' ("Dr. Meyers") deposition testimony was proffered by BPW. He believed that Greener's AVN was caused by long-term alcohol use. Both doctors agreed that Greener had a fifty percent permanent impairment to his lower left extremity. The Claimant also briefly testified about his work, the medications he had been on, and that he had been consuming alcohol on a regular basis for twenty-eight years.

The Board concluded that Greener had met his burden of showing a causal connection between the AVN and the steroids he took to treat the lung injury. It accepted the testimony of Dr. Rodgers over that of Dr. Meyers. In addition, the Board found Greener to be credible and accepted his testimony regarding his alcohol consumption and medication use. It noted that Greener's consumption of around three to four beers a day over the past twenty-eight years was

not excessive. The Board awarded Greener permanent impairment benefits for a fifty percent permanent impairment to the left lower extremity. BPW has appealed that decision. At issue is whether there was substantial evidence to support the Board's decision that the steroid treatment for the lung injury caused Greener's AVN.

## **DISCUSSION**

The Supreme Court and this Court repeatedly have emphasized the limited appellate review of the factual findings of an administrative agency. The function of the reviewing Court is to determine whether the agency's decision is supported by substantial evidence, and to review questions of law de novo. *Johnson v. Chrysler Corp.*, 312 A.2d 64, 66-67 (Del. 1965); *General Motors v. Freeman*, 164 A.2d 686, 688 (Del. 1960); *In re Beattie*, 180 A.2d 741, 744 (Del. Super. Ct. 1962). Substantial evidence means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion. *Oceanport Ind. v. Wilmington Stevedores*, 636 A.2d 892, 899 (Del. 1994); *Battista v. Chrysler Corp.*, 517 A.2d 295, 297 (Del.), *app. disp.*, 515 A.2d 397 (Del. 1986). The appellate court does not weigh the evidence, determine questions of credibility, or make its own factual findings. *Johnson v. Chrysler Corp.*, 312 A.2d at 66. It merely ascertains whether the evidence is legally adequate to support the agency's factual findings. 29 *Del. C.* § 10142(d).

In this case, two physicians testified about an area of the medical field in which there is some uncertainty. AVN (also called osteonecrosis or aseptic necrosis) is a condition in which something impairs the blood flow to the bone, in this case, the ball joint at the top of the femur (the femoral head). See Ram C. Sharma, M.D. and Michael Battistone, M.D., *Avascular Necrosis*, available at <http://www.eMedicine.com/med/topic2924.htm> (last visited May 18,

2005); Michael R. Aiello, M.D., *Avascular Necrosis, Femoral Head*, available at <http://emedicine.com/radio/topic70.htm> (last visited May 18, 2005); Nat'l Inst. of Arthritis and Musculoskeletal and Skin Diseases, Nat'l Insts. of Health, *Questions & Answers about Avascular Necrosis* (January 2001), available at [http://www.niams.nih.gov/hi/topics/avascular\\_necrosis/](http://www.niams.nih.gov/hi/topics/avascular_necrosis/) (last visited May 18, 2005) ("the NIH publication"). The lack of blood to the bone causes the tissue to die and it eventually collapses and has to be replaced. AVN can be caused either traumatically, such as when an accident cuts off the blood flow, or nontraumatically. An example of nontraumatic AVN is the bends, or decompression sickness, which occurs when nitrogen bubbles in the blood obstruct the capillaries. The two most common causes of nontraumatic AVN are thought to be corticosteroid use and long-term alcohol use. Doctors are not exactly sure how either one causes AVN, but they do believe there is a connection, having to do with the production of fatty substances in the blood.

The conflict in this case arises over the question of whether a limited dose of corticosteroids can cause AVN. Dr. Meyers believed that a short fifteen-day course of steroids, totaling 360 mg could not possibly cause AVN. Dr. Rodgers disagreed, citing a Canadian study and also basing his opinion on the fact that the inhaled steroids Greener was taking could have been absorbed systemically in small amounts.

Dr. Rodgers initially met with Greener on June 21, 2002 for a permanency evaluation, and then again on March 21, 2004. He calculated a fifty percent permanent injury to the left lower extremity as complication from a work-related injury. He also reviewed Greener's medical records.

As treatment for his lung injury, Greener had been prescribed Vanceril by his treating physician, Dr. Zouhair Harb (“Dr. Harb”), a pulmonary specialist. Vanceril is an inhalant containing the active ingredient, beclomethasone, which is a corticosteroid. When he did not improve, Dr. Harb prescribed Greener a short, fifteen-day course, of the corticosteroid prednisone. During that time, Greener discontinued his use of Vanceril, but it was prescribed again to him afterwards at double the strength of his previous prescription. He was also, at some point, prescribed another inhalant, Pulmicort, which contains the corticosteroid budesonide.

When he began to develop pains in his hip, Greener was referred to a Dr. Choy, an orthopedist, who discovered the AVN of the femoral head. According to Dr. Meyer’s reading of Greener’s medical records, when discovered by Dr. Choy, the avascular necrosis was believed to be related to his previous steroid use. In December of 2000, Greener had a total hip replacement.

Dr. Rodgers relied mainly on an article from the Canadian Journal of Medicine. *See* Michael D. McKee, *et al.*, *Osteonecrosis of the femoral head in men following short-course corticosteroid therapy: a report of 15 cases*, 164(2) CMAJ 205-206 (January 3, 2001), available at <http://www.cmaj.ca/cgi/content/full/164/2/205> (last visited May 18, 2005). That article reported on fifteen cases where men had developed AVN after a short-course of corticosteroid medication. He stated that within the past four years researchers have discovered that AVN may be caused by short-courses of smaller doses of corticosteroids. Dr. Rodgers also referenced a 2001 article from the American Journal of Clinical Dermatology, which, he stated, warned dermatologists to be aware of the risk of AVN with the medications they were prescribing. In addition, he believed that Greener’s treatment with inhaled corticosteroids, which lasted up to

two years, added to his risk of developing AVN because, although inhaled, the active ingredients can also be systemically absorbed. He cited no articles to support this theory.

Dr. Meyers met with Greener on June 17, 2004. He calculated a fifty percent permanent injury to the lower left extremity, and he also reviewed Greener's medical records. Dr. Meyers relied principally on an NIH publication, cited above, which was published in the very same month, January 2001 as the Canadian study. The NIH publication states: "Studies suggest that long-term, systemic (oral or intravenous) corticosteroid use is associated with 35 percent of all cases of nontraumatic avascular necrosis. However, there is no known risk of avascular necrosis associated with the limited use of steroids." NIH publication at 3. The publication goes on to say: "Excessive alcohol use and corticosteroid use are two of the most common causes of nontraumatic avascular necrosis. In people who drink an excessive amount of alcohol, fatty substances may block blood vessels, causing a decreased blood supply to the bones that results in avascular necrosis." *Id.*

Dr. Meyer was not aware of Greener's use of the inhaled corticosteroids. When asked whether this would affect his assessment of the cause of the AVN, Dr. Meyer said he would have to do more research and could not comment on whether the inhaled steroids could have caused or contributed to the risk of injury. Neither doctor knew what affects the combination of long-term alcohol use along with a limited steroid regimen could have on the risk for AVN. Nor were they aware of any articles or studies on the combined risk.

"It is well-established that when qualified experts give conflicting medical testimony in a workers' compensation case, the Industrial Accident Board is free to rely on the opinion of either expert, and such evidence constitutes substantial evidence for purposes of the Board's decision."

*State of Delaware v. Steen*, 1999 WL 743326, at \* 3 (Del. Super. Ct.), citing, *DiSabatino Bros., Inc. v. Wortman*, 453 A.2d 102 (Del. 1982). In *Steen*, the Court affirmed the Board's decision accepting one expert's testimony over another's on the controversial issue of whether extreme stress can cause an intracranial aneurysm to rupture. There, the employer challenged the decision under *Daubert v. Merrill Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). The *Steen* Court noted that, in that case, the experts did agree on one thing, that the medical community was unsure about what exactly caused an intracranial aneurysm to rupture. It stated:

As acknowledged in *Daubert*, “[s]cience is not an encyclopedic body of knowledge about the universe. Instead, it represents a process for proposing and refining theoretical explanations about the world that are subject to further testing and refinement.”

At some future time, improved or innovative testing may prove or disprove the theory that extreme stress in combination with greatly elevated blood pressure can lead to a ruptured aneurysm. At the present time, however, this theory has not been rejected or refuted in the highly specialized world of neurology.

1999 WL 743326, at \*4, citing, *Daubert*, 509 U.S. at 590.

As in *Steen*, there is uncertainty surrounding the causal connections between steroid use and AVN and long-term alcohol use and AVN. Researchers know that there is a connection, but cannot say exactly why or under what circumstances AVN occurs in association with steroid use or long-term alcohol use. Both Dr. Meyers and Dr. Rodgers presented evidence to support their opinions. Greener had used steroids and within a period of time, consistent with the findings of the Canadian study, developed AVN. He had also consumed several beers a day for twenty-eight years. Under these circumstances, the Court finds the Board properly accepted Dr. Rodgers' opinion that the steroids were a cause of Greener's AVN.

Both doctors were hampered in drawing their conclusions by the uncertainty surrounding the causes of AVN. Thus, the Board was limited in its own review by the nature of the scientific studies that are in existence. There was evidence supporting both positions and the Board's conclusion that the AVN was related to the steroids taken for his lung injury was supported by substantial evidence. As the Court noted in *Steen*, perhaps, at some future time, more studies will prove or disprove that a short course of steroids causes AVN, or that inhaled steroids also cause AVN, or that a combination of long-term alcohol use and limited steroid use can cause AVN. Presently, however, these questions have not been definitively answered in such a way that the medical community is in complete agreement.

The Board's acceptance of Dr. Rodgers' opinion was well-reasoned. It was swayed by the fact that he based his opinion on a peer-reviewed article. It noted that Dr. Meyers based his opinion on an information sheet written for lay people, and that he was not aware of Greener's long-term inhaled steroid use. The Board pointed out that Dr. Meyers testified he would be willing to reconsider his opinion if the Claimant had used inhaled steroids. Both doctors were qualified experts, and the Board was free to rely on the opinion of either of them. It is the province of the Board, not the Court, to determine questions of credibility.

Moreover, this Court's decision is not affected by the fact that the study cited by Dr. Rodgers appeared in a Canadian Journal. It was peer reviewed. The fact that Canadian doctors cannot practice medicine in the United States is irrelevant to a question of whether the study in question was a valid and reliable study.<sup>1</sup> The steroid examined in the study was prednisone, the very same steroid that was prescribed in this case. BPW has presented no compelling reason to doubt the scientific validity of the Canadian study relied upon by Dr. Rodgers.



**CONCLUSION**

Considering the foregoing, the decision of the Board is affirmed.

***IT IS SO ORDERED.***

Very truly yours,

Richard F. Stokes

cc: Prothonotary  
Industrial Accident Board

## ENDNOTES

1. There are many instances in which scientific discoveries and studies from foreign jurisdictions have been considered valid and have been relied upon by scientists in this country. For example, in 1935, although many scientists were working to develop radar, it was the British, with the help of a Scottish physicist, Robert Alexander Watson Watt, who created the first successful radar.

*See* Stuart Berg Flexner and Anne H. Soukhanov, *Speaking Freely: A Guided Tour of American English from Plymouth Rock to Silicon Valley* 150 (Oxford University Press 1997); *The British Invention of Radar*, at <http://www.vectorsite.net/ttwiz1.html> (last visited May 25, 2005).