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IN THE SUPREME COURT OF FLORIDA

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CASE NO. 01-1127

UNITED STATES SUGAR CORP.

Petitioner,

v.

G.J. HENSON,

Respondent.

ORIGINAL

RESPONDENT'S ANSWER BRIEF ON THE MERITS

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STATEMENT OF THE CASE AND FACTS

A. The Exposure

G.J. Henson worked for U.S. Sugar (USS) as an agricultural mechanic for 28 years (R. 928). Henson spent 75 % of his day in the field (R. 944, 980). Usually there were five machines spraying pesticides simultaneously (R. 224). When a mechanic was called to fix a broken machine, the other four machines would continue to spray (R. 224-226). The spray would visibly drift (R. 225, 261, 262). Henson frequently had to lie on ground which had recently been sprayed with pesticides (R. 992). USS added "soap" to make the pesticides stick to whatever they touched, including Henson (R. 992).

Because his truck had no air conditioning, Henson had to drive through the fields with his windows down (R. 979, 999). Henson was usually not warned to stay away from areas where aerial spraying was occurring and the planes would sometimes cover his truck with spray (R.227- 229, 978, 1000). Henson's foreman conceded that USS is just now working on improving policies regarding aerial spraying by trying to get on the radio and tell employees where to watch for the planes (R. 278).

The spray machines were used year round and only washed when it rained (R. 212, 213, 224, 251,961, 988). Repairs requiring the removal of hoses would result in the pesticide getting all over him (R.949, 954). When the hoppers which distributed parathion and mocap broke, Henson would have to dig out the pesticide with his hands

(R. 208, 219, 950-953, 978). Henson's foreman, Eugene Hollon, who worked as a mechanic from 1979 to 1984, testified to occasions when he had pesticides dripping off his elbows (R. 273, 289).

USS constructed and used a makeshift mosquito fogger, which worked by dripping malathion onto a hot engine manifold to create toxic smoke (R. 284, 1009). The Manufacturer's Safety Data Sheet (MSDS) for malathion states under the category, "Conditions to Avoid":

Thermal decomposition and burning may produce highly toxic by-products.

(R. 1452). When the fogger would malfunction, Henson had to tear it apart and would get malathion and its byproducts all over his hands and arms (R. 1009-1111).

USS told Henson that the pesticides would not hurt him and he was given no safety training for handling them (R. 216, 220, 979). USS never provided gloves which were workable in the field (R. 965, 990-91). Henson had no access to soap and did not start carrying water on his truck until 1994 (R. 282,975). Henson ordinarily also got grease and oil on his hands during the course of performing a mechanical repair which also enhanced absorption (effectively creating a pesticide "ointment") (R. 959, 2140).

Foreman Hollen confirmed that no protective clothing was provided to the mechanics until the last few years, at which point they were provided with rubber boots, rubber gloves, paper suits, safety glasses, goggles and eyewash (R. 251, 285).

An official USS "respiratory surveillance program" document contained in Henson's personnel file, dated November 23, 1992, states:

Employee may be exposed to the following:

Herbicides: Atrex (Atrazine), Evik, AsuloX, 2-4-D, Roundup

Insecticides: Diazon, Guthion, Malathion, Mocap

(R.2520). It is undisputed that the spray records in evidence accurately reflect the level and identity of the pesticides sprayed at the USS plantation where Henson worked from 1984 to 1996, including: 2,4-D, mocap, malathion, dursban/chlorpyrifos, diazinon, and MSMA (methyl arsenic acid) (R. 385, 1291, 4003- 6060).

Ellis Banks Clark is a certified industrial hygienist and safety professional who worked in the chemical industry for 30 years (R.1260-61, 1264). Clark reviewed the depositions, sworn testimony, USS's spray records and equipment lists (R. 1279). Clark was allowed a limited observation of the maintenance shed area at USS (R. 1278-79). Clark observed unwashed equipment in the tool shed heavily laden with "massive deposits of whatever substance the equipment was broadcasting" (USS refused to tell him the nature of the substance) (R. 1318, 1326).

Clark testified that Henson was regularly, repeatedly exposed (particularly dermally) to the pesticides contained within the agricultural equipment that he maintained (R. 1319). Both Clark and USS's toxicologist, Michael Wernke, agreed that open wounds on the hand (to which mechanics are susceptible through abrasions) increased the absorptive capacity of his skin (R. 438, 1296-98). Clark testified that the

limited wash facilities affected the length of each exposure and caused Henson to soil the interior surfaces of his truck, leading to repeated secondary exposures (R. 1302).

B. The Pesticides

The official EPA handbook "*Protect Yourself From Pesticides - Guide for Pesticide Handlers*" (R. 1499-1581), was promulgated in connection with its 1992 Worker Protection Standard. In issuing these regulations, the EPA admitted that its previous regulations were "inadequate to protect agricultural workers and pesticide handlers who are occupationally exposed to pesticides" (R. 1565). After discussing the dangers of acute exposure to high levels of pesticides, the EPA discussed the health risks of chronic exposure:

The effects of chronic exposure to low levels of pesticides can be as serious or more serious. The medical literature links pesticide to a variety of chronic diseases including cancer (particularly leukemia), birth defects, blood disorders, sterility, abnormalities in liver and kidney function, genetic damage, and *neurological*, psychological, and behavioral effects.

(R. 1566)(e.s.).

USS's neurologist, Dr. Sanchez- Ramos, testified that it is "clear" that pesticide exposure can produce delayed onset polyneuropathy, adding that it is "well known" that organophosphates produce neurotoxicity separate and apart from their cholinesterase inhibiting activity, damaging the myeline covering of the peripheral nerves and causing a protracted neuropathy lasting months or years (R. 2716, 2739).

USS's toxicologist, Michael J. Wernke, concurred that studies suggest some pesticides can cause peripheral neuropathies and conceded that the carbamate class may be capable of functional nerve damage (R.462,472, 488).

Malathion is a typical example of the organophosphates (R. 1452). Its MSDS indicates that handlers must wear chemical resistant gloves, and among the listed health risks of exposure are "nervous disorders" (R. 1453). The MSDS for the herbicide 2,4-D indicates that no safe TLV levels have been established for its active ingredients (R. 1404). It indicates both acute *and chronic* health risks and instructs that chemical resistant gloves should be worn (R. 1405). The MSDS for the insecticide Mocap states:

DANGER! POISONOUS IF SWALLOWED, INHALED
OR ABSORBED THROUGH SKIN. RAPIDLY
ABSORBED THROUGH THE SKIN.

(R. 1456). The personal protection remarks in the Mocap MSDS state:

While developing safe handling procedures, do not overlook the need to clean equipment and piping systems before maintenance and repairs.

(R. 1460).

C. Henson's Illness

Prior to February 1996, Henson displayed a history of frequent flu-like symptoms, which even USS's expert concedes could actually have been acute responses to pesticide exposure (R. 1217, 2732). Henson's medical records show that

he suffered from shortness of breath and muscle weakness for a couple of years, which may have been initial signs of chronic pesticide exposure (R. 1866).

In or about February 1996, Henson began seeing his family physicians for dizzy spells and shortness of breath (R. 1586, 1590). When Henson returned to his family physician on March 14, 1996, Dr. Harland performed a chest x-ray revealing an elevated right hemidiaphragm (R. 1591). Dr. Harland performed a CT scan, which showed no tumor to otherwise explain the hemidiaphragmatic elevation¹ (R. 1591).

Dr. Harland then referred Henson for treatment by a pulmonologist, Dr. Neil Warshoff (R. 1750). Dr. Warshoff performed a CT scan and a "sniff test" (R. 1754-55). The positive sniff test reduced the possibilities to either a paralyzed phrenic nerve or an endobronchial lesion (R. 1826). The lesion possibility was essentially excluded by bronchoscopy and had there been a malignancy it would have become evident by the time of trial (R. 1763, 1826, 1830-31).

Dr. Warshoff's diagnosis of phrenic nerve paralysis was confirmed when Henson was referred to Shands Hospital for a second opinion on July 22, 1997 (R. 1763, 1784). The Shands report raised questions of some other underlying neurological processes, but such conditions must now be excluded because of their

¹ Dr. Harland admitted he had no expertise in pesticides and neither the JCC nor the First DCA placed any reliance on his causation opinions. His deposition was properly admitted to shed light on the initial presentation of Henson's illness. See, *Heller v. Shaw Industries*, 167 F.3d 146, 159 fn.8 (3rd Circ. 1999); *Hadden v. State*, 690 So.2d 573, 581(Fla. 1997).

progressive nature and the lapse of an additional year and a half (R. 1787).

Although Dr. Warshoff initially felt that a cervical root injury was possible, MRI results excluded it (R. 1763). At the June 5, 1996 visit, Dr. Warshoff began to proceed on the theory that Henson's condition was chemical exposure related, a theory which became more and more solid as he progressed (R. 1818, 1823). Dr. Warshoff testified that one of the main things they do with exposure-related lung disease is remove the patient from the exposure to the best of their ability (R. 1805, 1851). He has told Henson to never be exposed to pesticides again (R. 1851).

Henson quit smoking in 1988 (R. 1753). Because of Henson's history of cigarette smoking, Dr. Warshoff initially expected to also find evidence of chronic obstructive pulmonary disease (COPD) (i.e., emphysema, asthma or chronic bronchitis), the main effect of cigarette smoking on the lungs (R. 1757-59). However, the sophisticated pulmonary function testing which Dr. Warshoff administered showed no COPD, excluding such conditions from consideration (R. 1757-59, 1856). USS's occupational medicine specialist, Dr. Stuart Brooks, concurred (R. 519).

Henson almost died in 1996 on a few occasions, suffering through multiple hospitalizations, a tracheotomy, ventilator dependency and two stints in rehabilitation facilities (R. 540, 681, 1623). Dr. Warshoff testified that Henson's pulmonary problems increased after March 1996 through the natural history of his disease (R. 1841). The paralyzed diaphragm is the major determinant of the majority of Henson's

symptoms (R. 1847). Because the area of the lung next to the paralyzed diaphragm does not absorb enough oxygen, the lung has collapsed (R. 1630).

Dr. Warshoff testified that he would not expect 28 years of chemical exposure to get better in a month or two (R. 1842). While Henson's right phrenic nerve still remains paralyzed, Dr. Warshoff began to note definite improvement in Henson's condition during the first several months of 1997 (R. 1858). This testimony is corroborated by USS's witness, Dr. Stuart Brooks (R. 546). Dr. Warshoff testified that the improvement he has seen since removing Henson from the exposure "all correlates" with the chemical exposure diagnosis (R. 1806). Dr. Bowsher testified that it would be nice to re-expose Henson and see what happens, but he is a human being not a science experiment (R. 1805).

D. Dr. Bowsher's Opinion

Dr. Dennis J. Bowsher is board certified in clinical pharmacology and toxicology (R. 2042, 2151). Dr. Bowsher was a member of the medical school faculty at Northwestern University Medical School from 1982 to 1984 and Indiana University from 1987 to 1991 (R. 2180). He received a National Research Award from the National Institutes of Health in 1983-84 (R. 2180).

Dr. Bowsher evaluated Henson clinically, reviewed USS's spray records and the MSDS for the chemicals identified (R. 2058). In formulating his opinions, Dr. Bowsher reviewed the major textbooks and references in the field, including Casarett & Doull's

Toxicology, the Basic Science of Poisons (John Doull, M.D., Ph.D., Curtis Klaassen, M.D., Ph.D., & Mary O. Amdur, Ph.D., eds., 3rd ed. 1986), the *Merke Index*, *The Pharmacological Basis of Therapeutics*, the *Dictionary of Toxicology*, and the *Crop Protection Reference* (R. 2116-17). Dr. Bowsher also reviewed case studies contained in the reference texts he mentioned and in the MSDS for 2,4-D (R. 2120-21).

Based upon history and his own examination, Dr. Bowsher concluded that Henson suffers from the following neurological conditions: sleep apnea, motor mono-neuritis of both the phrenic nerve controlling the right diaphragm and the nerve controlling the movement of the proximal right leg, sensory neuropathies (including partial deafness, loss of sensation in the right leg, and patchy lower extremity peripheral neuropathy) and also suffers from an intention tremor (R. 2076-77).

Dr. Bowsher testified that within reasonable medical certainty, Henson's profound neurological illnesses are directly caused by the pesticides to which Henson was exposed at USS, including the insecticides mocap (an organophosphate), MSMA, dursban (a/k/a chlorpyrifos, another organophosphate), the herbicides weedar (a chlorophynoxy acetic acid), and atrazine (R. 2078-2080).

Dr. Bowsher explained that insecticides are designed to kill through suffocation, by paralyzing the insect's breathing muscles (R. 2064). Acetylcholine (ACH), the neurotransmitter that makes muscles move, works the same in humans as it does in insects (R. 2065). The exposure to organophosphates causes enzyme regeneration to

slow by a factor of 1,000 to 10,000 – with some acting to such a degree that they invariably invoke motor and sensory neuropathies (R. 2085-86).

Pyrethroids are also known to lead to peripheral nerve damage, although the way in which this damage occurs is not well known, as the pyrethroids are not ACH inhibitors (R. 2068-69). MSMA is a heavy metal arsenic which inactivates enzymes, causing malfunction of bodily organs and leading to liver disease, damage to the nerves and skin (R. 2067-68). The chlorophenoxy compounds are herbicides which kill plants by inhibiting enzymes having to do with the basic metabolism of sugar (R. 2069).

Dr. Bowsher testified that it is dangerous for an individual to undergo a cumulative or chronic exposure to pesticides, pointing to the motor and sensory neuropathies outlined in the MSDS for weedar and paraquat (R. 2084-85). These neuropathies are also well documented in standard toxicology textbooks (R. 2085).

Paraquat is a Class I pesticide (R. 2087). Class II pesticides include mocap, dursban, and some of the atrazines (R. 2087). The Class I and Class II pesticides are capable of the types of neurological toxicity that Henson displayed (R. 2090). These agents damage nerves beyond inhibition of enzymes in ways that we do not fully understand (R. 2091).

Dr. Bowsher pointed out that according to its MSDS, the herbicide 2,4-D causes muscle weakness, peripheral and sensory neuropathy, and gastrointestinal inflammation -- all things from which Henson suffers (R. 2182). Dr. Bowsher explained that the

toxicities of these agents are patient-dependent, but are usually *not* seen bilaterally (R. 2081). However, as in Henson's case, usually more than one nerve is involved (often the lateral cutaneous nerve of the thigh) (R. 2080). Henson's pattern of multiple nerves on the same side (right leg and right phrenic nerve) is typical. (R. 2081). Dr. Bowsher opined that Henson's phrenic nerve paralysis belongs with the other motor neuropathies and is due to cumulative pesticide exposure (R. 2160).

Dr. Bowsher explained that whether a small amount of pesticide or other chemical would cause a response depends not just on the magnitude of the dose but the nature of the dose/response curve for that chemical (R. 2169). These curves have not been generated for human beings with respect to these chemicals (R. 2171). Since we do not know the shapes of these curves in man, we are forced to fall back on what we do know -- that some individuals experiencing chronic and repeated exposure suffer clinical toxicity, particularly in the case of the organophosphates (R. 2172). That is what has occurred here (R. 2172-73).

Henson's diabetes manifested for the first time in May 1997, more than a year after his respiratory condition (R. 2154). While it is possible for diabetes to cause peripheral neuropathy, one must have chronicity of diabetes to get that result (R. 2154). The time-line in this case is backwards to what would be necessary (R. 2152, 2154).

Dr. Bowsher also held a tangential opinion that claimant's chronic exposure to paraquat caused the minimal pulmonary fibrosis shown on Henson's tissue biopsy, but

freely acknowledged that he could not make that *specific* link within reasonable medical certainty (because smoking and fibrosis are also linked he wished to defer to a pulmonologist) and thus acknowledged that this opinion was not generally accepted (R. 2094-95, 2121-22). USS made no attempt to link this acknowledgment to Dr. Bowsher's opinion on the central phrenic nerve paralysis issue, which he reiterated *was* being offered within reasonable medical certainty (R. 2078)².

E. Dr. Warshoff's Opinion

Dr. Neil Warshoff is board certified in pulmonary medicine, has treated more than 100 patients with pesticide exposure (including approximately 25 cases of chronic exposure), has treated a number of cases of diaphragmatic paralysis (people refer that specific problem to him), and has been Henson's primary treating physician from nearly the outset (R. 1750, 1813, 1815, 1836).

Dr. Warshoff testified that organophosphates are known to cause respiratory failure by interfering in the neuromuscular junctions where metabolism occurs, preventing the respiratory muscles from functioning (R. 1615). Pesticides produce different symptoms in different people but are known to cause mononeuropathies, of which phrenic nerve paralysis would be an example (R. 1814, 1860-61). This is a basic

²USS's treatment of Dr. Bowsher's narrow acknowledgment on this tangential point as a broad concession regarding his central opinion ("Dr Bowsher *admitted* his causation opinion was *not* generally accepted ..." Initial Brief at 11), is disingenuous.

part of medical school training and can be gleaned from any relevant text (R. 1861).

Mononeuropathies are more common with chronic versus acute exposure (R. 1864).

F. Dr. Brown's Opinion

Dr. Jeffrey Brown is a board certified clinical neurologist (R. 1148-50). Dr. Brown conducted a physical examination and a medical records review (R. 1160, 1164, 1181). Dr. Brown indicated that he did not review specific epidemiological studies, but that such studies are reviewed in the textbook, "*Occupational and Environmental Neurology*," to which he referred (R. 118, 1201, 1221).

Henson's diffuse absence of deep tendon reflexes on physical examination indicated a generalized peripheral neuropathy (R. 1160). In addition, he had features of a mononeuropathy multiplex, including the vestibular nerves, both ulnar nerves, the right femoral nerve, and the right phrenic nerve (R. 1161). Henson's tremor was also present (R. 1161). All are neurologic diagnoses (R. 1162). Dr. Brown testified that most of the claimant's deterioration is the result of the nerve problem, which caused other medical problems, which "snowballed" (R. 1192).

Dr. Brown testified that it was "pretty-well documented" in the literature (specifically pointing to multiple references in the occupational neurology text upon which he relied) that neurological deterioration can continue many months after exposure ceases due to the binding of the chemicals to nerve cell receptors, some irreversibly (R. 1191-92).

Dr. Brown pointed out that phrenic nerve palsies are uncommon outside of the realm of trauma and that, given their rarity, he would not expect to see a research project conducted on the relationship between pesticides and phrenic nerve disorder, specifically. (R. 1220). Dr. Brown opined that within reasonable medical certainty Henson's pesticide exposure caused his phrenic nerve mononeuropathy (R. 1206)

Dr. Brown testified that while typically a unilateral phrenic nerve paralysis is due to severe trauma (e.g., cutting the nerve during open heart surgery) there is no such trauma by history here (R. 1166). From his records review, Dr. Brown also saw no information to cause him to believe that the claimant had undiagnosed diabetes prior to the institution of steroid treatments (which occurred in *response* to the onset of the pulmonary problems) (R. 1164). Dr. Brown thus concurred that diabetes is not the cause of Henson's mononeuropathy multiplex (R. 1162-63).

While the most common causes of nerve damage, generally, are diabetes, alcohol, nutritional deficiencies, heavy metal poisoning, and auto-immune conditions, Dr. Brown also excluded these other conditions based upon history (R. 1167). There was also no evidence of neurological damage as a result of the claimant's smoking and no evidence of any cervical nerve root injury (R. 1172, 1199).

When asked why the chemical exposure manifested unilaterally, Dr. Brown testified that he "never ceases to be amazed" at how patchy what one would think should be a generalized systemic insult, can present. He gave as a classic example in

the field of central neurology the immune phenomenon multiple sclerosis. MS attacks one spot of the brain and not anywhere else and then a different place, or in the spinal cord another time, or multiple places another time (R. 1170). Nobody can explain why a systemic insult often affects just one area of the body, it just happens (R. 1170).

G. Dr. Lichtblau's Opinion

Dr. Craig Lichtblau is board certified in physical medicine and rehabilitation (R. 662). He has seen a lot of phrenic nerve paralysis in conjunction with spinal cord injury (R. 780). In order to be board certified in physiatry, one must practice neurology and have a basic understanding of the different specialties (R. 686).

Dr. Lichtblau examined the claimant and conducted a complete medical records review, requiring nearly 20 hours of study (R. 674, 683, 743). Dr. Lichtblau's physical examination of the claimant disclosed patch hypesthesia to light touch of the left forearm and hand, the right hand and thigh and the right calf (R. 683). Dr. Lichtblau testified that this patch hypesthesia is consistent with peripheral neuropathy, whether demyelinating, axonal, or both (R. 684). An axonal neuropathy is an injury to the nerve fiber itself, as opposed to an injury to the insulation (myelin) around the fiber (R. 1202).

The claimant also displayed reduced reflexes which are also consistent with peripheral neuropathy (R. 684). Dr. Lichtblau testified that the claimant suffers from environmental exposure related lung disease secondary to prolonged, repetitive, and frequent pesticide exposure (R. 688). He assigned the claimant a 95 percent permanent

impairment rating pursuant to the Florida Guides (R. 692).

Dr. Lichtblau testified that Henson has suffered axonal loss in his peripheral nervous system, specifically the phrenic nerve (R. 697). According to Dr. Lichtblau, causation in this case is “clear cut” and “simple” (R. 741). The claimant was clearly exposed to organophosphates and it is clearly documented that axonal neuropathies are associated with organophosphate poisons (R. 736). He described it as basic “textbook science” that organophosphates cause nerve damage (R. 781).

When asked how he knows that organophosphates cause axonal neuropathies, Dr. Lichtblau first indicated that it is in “every” electromyography text, then pulled from his shelf “*Electrodiagnosis, an Anatomical and Clinical Approach*,” pointing to page 256 under the subcategory “Causes of Axonal Neuropathies,” which lists organophosphates among the organic compounds seen in association with axonal neuropathies, describing the current situation. (R. 736,743, 801).

While Dr. Lichtblau conceded that there is no general acceptance that chronic exposure to organophosphates causes phrenic nerve paralysis specifically, he testified that it *is* generally accepted that such exposures cause axonal neuropathies, of which Henson’s phrenic nerve paralysis is a textbook example (R. 777-78, 671).

H. USS’s Witnesses

The blood test that Dr. Harland performed in February 1996 showed Henson to have a blood sugar of 130, which all witnesses agree was only “slightly elevated” (R.

550, 1586). USS's diagnostician, Dr. Rubinstein, agreed that Henson's diabetes was steroid induced – the result of the medications administered to treat Henson's respiratory condition, not its cause (R. 2774, 2779).

Dr. Warren Sanchez-Ramos, USS's neurologist, had never seen a case of phrenic nerve paralysis prior to examining Henson (R. 2684, 2736). Dr. Sanchez-Ramos indicated that he went through the differential diagnosis process, excluding, *inter alia*, Parkinson's disease (R. 2708). Although he attributed most of Henson's neurological conditions to steroid-induced diabetes, he concurred with the other physicians that Henson's phrenic nerve paralysis is *not* attributable to diabetes³ (R. 2711, 2715). Rather, Dr. Sanchez-Ramos was alone in speculating that an infiltrating lymphoma "will eventually show itself" as the cause (R. 2715).

Dr. Sanchez-Ramos conceded that even after removing a patient from a chemical exposure, the cessation of exposure may be followed by a worsening of symptoms before recovery begins (R. 2727). Dr. Sanchez-Ramos also conceded that when it comes to adverse effects of specific chemicals it may require exposure to 100,000 people before one or two cases of a particular ailment appear, pointing out that despite clinical drug studies (administered to 5,000 -8,000 people) it is only when the

³ Dr. Ramos testified, "I can't attribute it [the phrenic nerve paralysis] to the diabetes..."(R. 2715). He then reiterated, "I could explain his condition *with the exception of the phrenic nerve paralysis* on the basis of just diabetes and cigarette smoking." (R.2736, e.s.). USS's statement at p.17 of its brief, that Dr. Ramos attributed claimant's "condition" to diabetes and smoking, is highly misleading.

drugs are used worldwide that certain adverse effects arise (R. 2738-39).

Michael J. Wernke is a toxicologist and pharmacologist (R. 413). His testimony relied upon two studies. The so-called "NOPES study" simply found detectable levels of pesticides in everybody's homes (R. 435). The other study of 16,000 pesticide applicators looked only at mortality (R. 478). Neither study was provided to the JCC and only the latter was provided to the First DCA.

I. Course of the Proceedings

This matter was the subject of a pretrial stipulation dated February 5, 1998, wherein Henson identified Dr. Bowsher as his IME toxicologist and Dr. Warshoff as his IME pulmonologist (R.3897). USS noted no objection to either witness and made no mention of *Frye v. United States*, 293 F. 1013 (D.C. Circ. 1923) or *Fla. Stat.* §90.702. This matter was then the subject of a final pretrial stipulation dated October 22, 1998, which set the final hearing for November 30, 1998. This stipulation again listed Drs. Warshoff and Bowsher as witnesses. In this pretrial stipulation, USS noted numerous evidentiary objections to the listed witnesses, but again none based on *Frye* or *Fla. Stat.* § 90.702 (R.3859). The stipulation specifically stated in bold letters:

ANY ISSUES NOT SPECIFICALLY RAISED IN THIS SECTION WILL BE DEEMED WAIVED OR ABANDONED UNLESS GOOD CAUSE IS SHOWN.

(R. 3859). *Frye* was not listed as a defense.

Henson's expert physicians were deposed approximately two weeks later, at

which time USS offered terse "90.702" objections, without any reference to *Frye* or its contents (R. 1168-9, 1768, 2070).

Finally, on December 7, 1998, two days before the scheduled final hearing, USS filed a 23 page motion *in limine*, alleging that the depositions of claimants' experts should be excluded under *Frye* because the link between chronic pesticide exposure and phrenic nerve paralysis was not generally accepted (R. 3112). That motion referenced and attached three academic studies which had appeared in the *British Journal of Industrial Medicine*. The first two dealt exclusively with paraquat, and focused on lung, liver and kidney damage rather than neurological effects (R.3124). These studies were not relied upon by USS's experts in their testimony and USS did not ask Henson's experts about them.

USS did ask Henson's neurologist about the third study, and Dr. Brown quickly pointed out that it had been conducted by Dow Chemical Co. (R. 1214). This study *assumed* that the single pesticide involved had no chronic effects and thus did not even attempt measurement of those effects. (R. 1214, 1253). USS made no further attempts to question either side's experts about this study.

The day after the motion *in limine* was filed (the day before the final hearing), Judge Jacobsen held a pretrial conference wherein several evidentiary motions were brought to her attention. Contrary to the implication at p.13 of USS's brief, USS never requested an opportunity to argue its motion *in limine* and never asked for a hearing on

it. When Judge Jacobsen indicated that she would defer ruling on USS's motion, USS offered no objection (R. 33, 104-05, 108).

Judge Jacobsen's final order denied USS's *Frye* objection, as follows:

The medical training of the claimant's treating physicians and the specialized training of claimant's other experts in toxicology and industrial hygiene have rendered their testimony of assistance to the undersigned. A treating physician's opinion linking a particular physical malady, such as the claimant's neurological/respiratory condition, to his chronic workplace exposure to a group of toxic chemical is not novel and, in this case, I find that the scientific principles undergirding the evidence are so generally accepted in the field of medicine and toxicology so as to render these opinions admissible.

As the ensuing recitation of evidence demonstrates, the relationship between pesticide exposure and neurological damage in human beings is basic medical science. This fact is demonstrated by the multiple medical opinions to that effect presented at bar, those physicians' multiple references to relevant toxicology and/or medical textbooks setting forth such principles, as well as similar such information which may be gleaned from the Manufacturers Safety Data Sheets in evidence.

(R.3968-69). The JCC went on to discuss and rule on the merits of the central causation question, at length (R. 3969-3987).

USS's initial brief in the First District Court attached over 200 pages of academic materials from ten different sources, *none* of which had been provided to the JCC. At page 19 of that initial brief, USS instructed the First DCA as to the breadth of its review responsibilities, as follows:

Under the *Berry* analysis, this Court may independently review the expert testimony and it may independently review the scientific literature in making a *de novo* review of novel scientific theories. U.S. Sugar invites such a review.

At oral argument, USS acknowledged that acute exposure to the subject pesticides is generally accepted to be neurotoxic but “refined” its *Frye* argument, asserting that what is not generally accepted is that chronic low-level exposure to pesticides can cause *unilateral* neurotoxicity. *U.S. Sugar Corp. v. Henson*, 787 So.2d 3, 9 (Fla. 1st DCA 2001).

In its thorough opinion, the First DCA quoted from *Casarett & Doull's* 1980 second edition rather than the 1986 third edition upon which Dr. Bowsher had relied. When USS criticized this citation in its motion for rehearing, the First DCA located a third edition and found that it contained the identical language it had quoted. *Henson*, 787 So.2d at 21-22. Rather than being chastened, USS now characterizes the First DCA as having “acknowledged its error in relying upon an outdated edition of a science text ...”(Initial Brief at p.21).

SUMMARY OF THE ARGUMENT

The Florida legislature has shown a consistent willingness to trade off other values in favor of efficiency and cost-effectiveness in the determination of workers' compensation matters. This overriding policy concern is fundamentally at odds with the expensive and time-consuming procedures of *Frye* and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 113 S.Ct. 2786, 2798 (1993).

The special role of physicians in the workers' compensation system, coupled with the specialized administrative fact-finding role of the Judges of Compensation Claims fundamentally distinguish the "gate-keeping" needs of the workers' compensation system from those in tort litigation. This is especially true since the legislature's 1993 creation of a panel of expert medical advisors (EMAs). These impartial experts were made available to resolve conflicts in medical testimony in an expert and cost-effective fashion, at the request of any party with reliability concerns. USS chose to forego this unique reliability safeguard.

One also cannot overlook the fact that workers' compensation has its own substantive standards for causation and lower burdens of proof -- a delicate balance forged over many decades. USS and their allies understand that if they can erect a threshold requirement of scientific certainty, evolved in a different context for different purposes, they can effectively transform those standards in a fundamental way (allowing the evidentiary "tail" to wag the substantive "dog").

USS did not request that the JCC afford argument or a hearing on its *Frye* motion and it did not argue this alleged error until the rehearing stage in the First District Court (two independent layers of waiver). USS expressly *requested* that the First District Court undertake an independent review of the scientific literature. Yet, when that court followed the suggested course and reached an undesired conclusion, USS decided that this, too, was error.

USS has admitted the acute neurotoxicity of these pesticides. Chronic neurotoxicity is also a matter of scientific orthodoxy in neurological textbooks, government literature, and judicial decisions. The established link between these pesticides and peripheral neuropathies provide ample foundation for the opinions linking these agents to Mr. Henson's peripheral nerve injury. The fact that Mr. Henson manifested this neurotoxicity in an idiosyncratic peripheral nerve is immaterial in the absence of some proof that the phrenic nerve should be treated differently than the other peripheral nerves.

The party opposing admissibility must frame narrow objections as to the precise scientific principle which it claims lacks general acceptance. USS failed to preserve its *Frye* objection by failing to assert it until the eve of trial, after Henson's experts had already been deposed.

LEGAL ARGUMENT

POINT I

THE CERTIFIED QUESTION SHOULD BE ANSWERED IN THE NEGATIVE, AS *FRYE* TESTING IS FUNDAMENTALLY INCONSISTENT WITH WORKERS' COMPENSATION.

A. Current Law

The First DCA's certified question is one of first impression in Florida. While this court made an off-hand reference to *Frye* in *Domino's Pizza v. Gibson*, 668 So.2d 593, 596 (Fla. 1996), that comment was offered merely to bolster this court's construction of *Fla. Stat. §440.09(3)*, not to decide the current question.

Research reveals only one state which has expressly held either *Frye* or *Daubert* applicable in a worker's compensation case. *See, K-Mart Corp. v. Morrison*, 609 N.E.2d 17(Ind. App. 1993)⁴. By contrast, three states have considered the question and clearly rejected application of *Frye* (or *Daubert*) in workers compensation. *See, Sheridan v. Catering Management, Inc.*, 558 N.W.2d 319 (Neb. App. 1997); *Armstrong v. City of Wichita*, 907 P.2d 923 (Kans. App. 1995); *Fuyat v. Los Alamos*

⁴Five states have reported decisions mentioning but not clearly deciding the issue. *See, City of Aurora v. Vaughn*, 824 P.2d 825 (Col. App. 1991); *State v. Steen*, 1999 WL743326 (Del. Super. 1999); *Green v. Texas Workers' Compensation Ins. Facility*, 993 S.W.2d 839 (Tex. App. 1999); *America West Airlines, Inc. v. Tope*, 935 S.W.2d 908 (Tex. App. 1996) (wrongful termination claim); *Norfolk Southern Railway Co. v. Baker*, 514 S.E.2d 448 (Ga. App. 1999); *Bryant v. Tidy Bldg. Services*, 678 So.2d 48 (La. App. 1996) (*Daubert* argument not preserved).

Nat. Laboratory, 811 P.2d 1313, 1317 (N.M. App. 1991). When one adds in the approximately 40 states with no reported opinion even *attempting* to apply *Frye* or *Daubert* in this context, one finds an overwhelming majority view.

The First District Court has said that the Florida evidence code applies in workers' compensation proceedings. *See, Martin Marietta Corp. v. Roop*, 566 So.2d 40, 42 (Fla. 1st DCA 1990). However, *Fla. Stat.* §440.29(1), states:

In making an investigation or inquiry or conducting a hearing, the Judge of Compensation Claims shall not be bound by technical or formal rules of procedure, except as provided by this chapter, but may make such investigation or inquiry, or conduct such hearing, in such manner as to best ascertain the rights of the parties.

Moreover, this Court has repeatedly utilized this section to justify the admissibility of evidence which would have been inadmissible under either the evidence code or common law rules. *See, Ezell-Titterton, Inc. v. A.K.F.*, 234 So.2d 360, 365 (Fla. 1970); *Jarvis v. Miami Retreat Foundation*, 128 So.2d 393, 397 (Fla. 1961).

Fortunately, this debate is moot because *Frye* is not a part of the evidence code, it is a common law rule of evidence. *See, Hadden*, 690 So.2d at 578. The workers' compensation system is based on a "mutual renunciation of common law rights and defenses by employers and employees alike." *Fla. Stat.* §440.015. The question then is what the legislature intended in adopting Florida's worker's compensation system.

B. The Special Cost Considerations

The Florida legislature tells us its intent in *Fla. Stat.* §440.015:

It is the intent of the legislature to insure the prompt delivery of benefits to the injured worker. Therefore, an efficient and self-executing system must be created which is not an economic or administrative burden. The division of Workers' Compensation shall administer the workers' compensation law in a manner which facilitates the self-execution of the system and the process of insuring the prompt and cost-effective delivery of payments.

This legislative expression is not just trendiness, it has its roots in the historical justification for this entire system (i.e., to replace an "unwieldy" tort system). *See, DeAyala v. Florida Farm Bureau Cas. Ins. Co.*, 543 So.2d 204, 206 (Fla. 1989).

With the legislative changes of the last decade, Florida workers' compensation procedures have grown increasingly foreign to those in general civil litigation. By statute, no medical opinions other than those of an EMA, an independent medical examiner (IME), or an authorized treating provider are admissible. *See, Fla. Stat.* §440.13(5)(e). Each party is bound by their choice of IME and can obtain an alternate examiner (with rare exception) only where the employee's illness has some aspect outside the qualifications of the first IME. *See, Fla. Stat.* §440.13(5)(b). By Division rule, no IME may be paid more than \$400. *See, City of Riviera Beach v. Napier*, 26 F.L.W. D1724 (Fla. 1st DCA July 13, 2001)(interpreting the reimbursement manual adopted pursuant to Rule 38F 7.020, Fla. Admin. Code).

With these unique procedural rules in mind, the Nebraska Court of Appeals' rationale for rejecting application of *Frye* in workers' compensation, resonates:

[A] claimant is not required to prove that a diagnosis is universally recognized by and agreed upon in the medical community. Such a requirement would impose an onerous burden upon a claimant in the context of workers' compensation litigation.

See, Sheridan, 558 N.W.2d at 328. It is these same concerns which led the First District Court to certify this question, stating:

The imposition of a *Frye* standard of admissibility of novel scientific evidence will certainly increase the cost and create delay in workers compensation proceedings. Further, the need to retain experts to establish that *Frye* conditions have been satisfied may serve as a deterrent to claimants being able to obtain counsel and prosecute a claim which might involve *Frye* issues. Finally, we believe the present workers' compensation system allows the JCC to evaluate competing medical testimony and make a determination on causation.

U. S. Sugar Corp. v. Henson, 787 So.2d at 11; *see also Brim v. State*, 779 So.2d 427, 428, 447 (Fla. 2nd DCA 2000)(*Brim II*) (identifying 120 articles relevant to its *de novo* review; noting that *Frye* hearings involve expensive expert time and testimony).

C. The Special Role of Physicians

It is no coincidence that Henson's experts were physicians. Physicians play a special role in Florida's workers' compensation system which does not exist in tort litigation. To provide care under Chapter 440, a health care provider must be certified

by the Division of Workers' Compensation. *Fla. Stat.* §440.13(3)(a). Physicians are called upon to provide IME's *Fla. Stat.* §440.13(5), and to act as EMAs whenever there is "disagreement in the opinions of the health care providers." *Fla. Stat.* §440.13(9)(c). Physicians must consent to the jurisdiction of the Division and may be required to submit treatment records. *Fla. Stat.* §440.13(3)(f). They must also submit regular treatment reports to the carrier. *Fla. Stat.* §440.13(4)(a). The causation of a claimant's injury must be proved to a reasonable medical certainty and supported (in all but obvious cases) by the medical testimony of physicians. *See, Martin Marrietta Corp. v. Glumb*, 523 So.2d at 1193 (Fla. 1st DCA 1988).

The central role that physicians play in workers' compensation has been recognized by the legislature in two ways which are fundamentally inconsistent with application of *Frye* to Chapter 440. First, *Fla. Stat.* §440.29(4) provides that:

All medical reports of authorized treating health care providers relating to the claimant and the subject accident *shall be received into evidence* by the Judge of Compensation Claims upon proper motion.

Similarly, *Fla. Stat.* §§440.13(9)(c), 440.25(4)(d), requires the admission of the reports and testimony of EMAs. Keeping in mind that *Frye* is purely a question of admissibility, when it comes to the opinions of authorized treating providers and EMAs the legislature has simply left no room for *Frye* testing, *mandating* admission.

Differential diagnosis is "the basic method of internal medicine." *In re Paoli*

R. R. Yard PCB Litigation, 35 F.3d 717, 755 (3rd Cir. 1994). A reliable differential diagnosis typically is performed after physical examinations, the taking of medical histories, and the review of clinical tests. *Westberry v. Gislaved Gummi AB*, 178 F.3d 257, 262 (4th Cir. 1999). It is generally accomplished by determining the possible causes for the patient's symptoms and then eliminating each potential causes until reaching one that cannot be ruled out (or determining which of those that cannot be excluded is the most likely). *Id.* This technique has widespread acceptance in the medical community, has been subject to peer review, and does not frequently lead to incorrect results. *Id.*

However, the conclusions that physicians reach using this method are inherently beyond general acceptance testing:

While an important aspect of assessing scientific validity (and therefore evidentiary reliability) is the ability of other scientists to test or retest a proponent's theory, differential diagnosis involves assessing causation with respect to a particular individual. This merely makes it a different type of science than science designed to produce a general theory; it does not make it unreliable science.

Paoli, 35 F.3d at 758; *see also, Berry v. CSX Transp., Inc.*, 709 So.2d 552, 571 (Fla. 1st DCA 1998) (differential diagnosis method is scientifically acceptable).

Because physicians play such a central role in this statutory scheme and because the product of their work is beyond general acceptance testing, *Frye* should be viewed as fundamentally at odds with Chapter 440. At a minimum, this Court should hold that

the opinions of physicians otherwise admissible under *Fla. Stat.* §440.13(5)(e) (i.e., authorized treaters, IMEs and EMAs) and offered within reasonable medical certainty, are exempt from *Frye* or *Daubert* testing.

D. The Special Role of the JCC

Frye testing is premised upon the fear that a jury will be overcome by the aura of reliability which often surrounds the testimony of an “expert” witness and thus will be duped by pseudoscience. *See, Flanagan v. State*, 625 So.2d 827, 828 (Fla. 1993); *Daubert*, 509 U.S. at 595-96, 113 S.Ct. at 2798; *Cella v. United States*, 998 F.2d 418, 423 (7th Cir. 1993). The trial judge is said to act as a “gatekeeper,” charged with judging basic reliability before turning the jury loose on the merits standard of correctness. *See, Paoli*, 35 F.3d at 744.

Unlike *Daubert*, the standard *Frye* analysis attempts to rigorously segregate the “general acceptance” responsibilities of the trial judge from the broader “substantive correctness” responsibilities reserved for the jury. In *Rodriguez v. Feinstein*, 26 F.L.W. D1813, 1814 (Fla. 3rd DCA July 25, 2001), the court stated:

... to involve judges in an evaluation of the acceptability of an expert’s opinions and conclusions would convert judges into fact-finders to an extent not envisioned by *Frye*, *Ramirez*, *Castillo*, or any other Florida case.

Id. at 1814. While this segregation may make sense in jury trials, it is impossible where the judge is also the trier of fact (workers compensation benefits cannot be

awarded unless the JCC accepts the *correctness* of claimant's experts).

To use USS's nomenclature, a JCC "dons a white coat" in the morning and wears it all day long, as the biggest part of his job is deciding which competing medical diagnosis/prognosis before him is the *correct* one. Fortunately, JCCs are not mere laymen (or even generalist circuit court judges), they are specialized administrative judges whom the Governor no doubt selects, at least in part, for their experience and skill in handling medico-legal issues in the worker's compensation arena.

E. The Special Role of the Expert Medical Advisor

In *General Electric Co. v. Joiner*, 522 U.S. 136, 149-50, 118 S.C. 512, 521 (1997), Justice Breyer filed a concurring opinion which quoted from the New England Journal of Medicine's Amici Brief, as follows:

[A] judge could better fulfill this gatekeeper function if he or she had help from scientists. Judges should be strongly encouraged to make greater use of their inherent authority ... to appoint experts... . Reputable experts could be recommended to courts by established scientific organizations, such as the National Academy of Sciences or the American Association for the Advancement of Science.

See also, J. Weinstein, "*Individual Justice in Mass Tort Litigation*," 116 (1995) (a court should sometimes "go beyond the experts proffered by the parties" and "utilize its powers to appoint independent experts").

Just three years earlier, the Florida legislature went one step better, creating a panel of "super-doctors" to effectively resolve, in a cost-effective and reliable manner,

conflicts in the opinions of medical providers. In certifying the slate of EMAs in each specialty, the Division was directed to consider the qualifications, training, impartiality, and commitment of these health care providers to the provision of quality medical care at a reasonable cost. *Fla. Stat.* §440.13(9)(a).⁵

Thus, any workers' compensation litigant concerned about the reliability of the medical evidence, or any JCC who feels "over his head" in resolving a causation dispute, has ready access to the Florida legislature's reliability solution, the EMA. The availability of EMAs and the fundamental guarantee of reliability which they assure, renders *Frye* testing unnecessary in workers' compensation. USS's failure to request an EMA appointment makes its *post hoc* reliability cries ring entirely hollow.

F. The Special Standards of Proof

A claimant's burden of proof in workers' compensation cases is significantly less than proof by a preponderance of evidence. *Schafrauth v. Marco Bay Resort, Ltd.*, 608 So.2d 97, 102 (Fla. 1st DCA 1992). Under so-called "logical cause" principles it is enough for an injured worker to show by "reasonable inference" that it is "logical" that

⁵This provision states in pertinent part that if there is a disagreement in the opinions of health care providers then the JCC is required to appoint an EMA at the request of either party or on the judge's own motion. *Fla. Stat.* §440.13(9)(c); *Palm Springs General Hosp. v. Cabrera*, 698 So.2d 1352, 1355-56 (Fla. 1st DCA 1997). An EMA must be appointed upon request where the issue is causation. *Horticulture Plus, Inc. v. Ash*, 26 F.L.W. D1791 (Fla. 1st DCA July 26, 2001). The opinion of the EMA is then presumed to be correct in the absence of clear and convincing evidence to the contrary. *Id.* Obviously, evidence which is so unreliable as to be inadmissible under *Frye* could never approach that lofty standard.

his injury arose from workplace conditions. *See, Johnson v. Koffee Kettle Restaurant*, 125 So.2d 297, 299 (Fla. 1960). The reason for this lower standard is grounded in the reason for workers' compensation – a means devised to require industry to share with society the expense of injuries caused by it. *Id.* The “logical cause” doctrine has been held to extend to so-called “exposure” cases. *See, Food Machinery Corp. v. Shook*, 425 So.2d 163 (Fla. 1st DCA 1983).

While the overlapping “occupational disease” cases are subject to the “clear evidence” standard, this not the same as the clear and convincing standard familiar from civil litigation. This Court has made clear that the “clear evidence” standard (while imposing a greater burden than logical cause) is still not as stringent as the preponderance of the evidence standard applied in most civil litigation. *See, Arkin Const. Co. v. Simpkins*, 99 So.2d 557, 560 (Fla. 1957).⁶

These lower *standards* of proof are carefully counterbalanced by additional substantive *elements* of proof (at least in the exposure and occupational disease

⁶ In *Arkin Construction*, at 557, this Court applied the “reasonable probability” standard to an occupational disease scenario, stating:

Further, although this court does not bind a claimant to the burden of proving his claim by the preponderance of the evidence, a claimant cannot recover on mere speculation or conjecture. ... A claimant must prove a causal connection between his employment and the injury for which compensation is claimed by clear evidence.

scenarios in which these difficult scientific issues overwhelmingly arise). *See, Lake v. Irwin Yacht & Marine Corp.*, 398 So.2d 902 (Fla. 1st DCA 1981). It is onto this delicate balance that USS wishes to drop the *Frye* sledgehammer⁷.

Any assessment of the virtues and drawbacks of *Frye* in a particular context must address the arbitrary interaction between the rules of law and the rules of science, evolved for different purposes, with different approaches to uncertainty. For example, in *Brim II* at 445 fn. 48, the court noted that the FBI does not permit forensic experts to claim that a DNA match has established a positive identification until the statistical probability reaches 1 in 260 billion.

Such extraordinary certainty demands may be justified where the potential consequence of a false positive is the execution of an innocent person. However, transposing such certainty demands to the workers' compensation arena (e.g., in a case where DNA testing was necessary to show that a strain of a virus was contracted in the workplace) is difficult to justify. Put differently, *Frye* has no uncertainty knob which can be adjusted. Instead, it arbitrarily adopts the certainty levels selected by science, for science's purposes, whatever they may be. *See also, Berry*, 709 So.2d at 559

⁷Amici Curiae Florida Fruit & Vegetable et. al., pose a hypothetical wherein a woman and her son are simultaneously injured while retrieving her paycheck at the workplace. They ask why different standards of reliability should apply to their injuries. One could as easily ask why the two enjoy different substantive causation standards, why one gets a jury and the other does not, why one can recover damages for pain and suffering and the other does not, why one is required to use a managed care arrangement for medical treatment and the other is not, etc.

(discussing railroad's demand that scientific "confidence interval" reach 95% accuracy).

While this criticism of *Frye* also applies in other contexts, because of the lesser standard of proof in workers' compensation cases, this flaw is magnified to a far greater degree. See, *Armstrong*, 907 P.2d at 929 (rejecting *Frye* in workers' compensation for precisely this reason, despite its adherence to *Frye* in tort); see also, *Maritime Overseas Corp. v. Ellis*, 886 S.W.2d 780, 791 (Tex. App. 1994) affirmed, 971 S.W.2d 402 (1998) (applying scientific rather than legal standard of evidence would effectively create a "beyond a reasonable doubt" standard, rather than the preponderance of the evidence standard which applies in Jones Act cases); *Hines v. Consolidated Rail Corp.*, 926 F.2d 262, 268 (3rd Cir. 1991) (lesser standards of causation under FELA can significantly influence determination of admissibility); see also, *Paoli*, 35 F.3d at 760-61 fn. 31 (because we are analyzing reliability for the purposes of litigation not for purposes of science, the substantive standard of causation can affect the standard of admissibility).

Cost and standard of proof problems make *Frye* especially inappropriate in workers' compensation. The central role of physicians, JCCs and EMAs make special gate-keeping unnecessary. This Court should answer the certified question in the negative (or at least hold that physician opinions offered within medical certainty are immune from such gate-keeping).

POINT II

THE REQUESTED REMAND FOR FURTHER FRYE PROCEEDINGS IS WITHOUT BASIS

A. The Alleged Procedural Errors

Unlike its position before the First DCA (where it requested *de novo* review of the merits), USS has asked this court to review only claimed procedural errors in the handling of its *Frye* motion. It has thus requested only a remand for further proceedings, not a *de novo* merits review by this Court (See initial brief at 35, 49-50). USS's reluctance to request such a review speaks volumes. Moreover, while appellate courts conduct *de novo* review of the merits of a *Frye* decision, *Brim v. State*, 695 So.2d 268, 274 (Fla. 1997) (*Brim I*), the purely procedural errors which USS alleges as grounds for the requested remand are subject to an abuse of discretion standard. *See e.g., Kumho Tire Co., v. Carmichael*, 526 U.S. 137, 152, 119 S.Ct. 1167, 1176 (1999).

In *Brim I*, 695 So.2d at 274, this Court held that an appellate court can consider scientific materials that are "not part of the trial record" in determining whether there is general acceptance within the relevant scientific community. In fact, this Court, itself, relied upon a report by the National Research Council which was not in existence at the time of trial, nor in the record even when the case was sent back to the District Court on remand. *See Brim II*, 779 So.2d at 435.

Moreover, even if extra-record review were improper, USS *invited* such a review

in its Initial Brief in the First DCA, attaching over 200 pages of academic materials from ten different sources (none of which had been provided to the JCC), and then instructing the First DCA as to the breadth of its review responsibilities, as follows:

Under the *Berry* analysis, this court may independently review the expert testimony and it may independently review the scientific literature in making a *de novo* review of novel scientific theories. U.S. Sugar invites such a review.

(USS Initial Brief in 1st DCA, p.19). A clearer case for application of “invited error” would be difficult to imagine. See, *Fuller v. Palm Auto Plaza, Inc.*, 683 So.2d 654, 655 (Fla. 4th DCA 1996); *Ashley v. State*, 642 So.2d 837, 838 (Fla. 3rd DCA 1994).⁸

USS filed its *Frye* motion the day before trial. It now claims that because Mr. Henson had the burden of proof he created reversible error by failing to ask for an evidentiary hearing on USS’s motion. USS confuses the issue. The issue here is not who had the burden of proof, the issue is preservation of error. If USS wanted an evidentiary hearing (or the right to claim the absence of such a hearing as error) it had an obligation to ask for it. See, *Commission on Ethics v. Barker*, 677 So.2d 254, 256 (Fla. 1996) (error not properly challenged below is not preserved for appellate review).

USS also did not argue this alleged error in either of its briefs to the First District Court or at oral argument, instead raising the argument for the first time in its motion

⁸In any event, the supposed error complained of (i.e., an alleged lack of notice and opportunity to respond) would automatically be cured by *de novo* review at this next level, but USS does not want such review, it wants a “do over.”

for rehearing, *See, U.S. Sugar Corp. v. Henson*, 787 So.2d at 20. Once again, any error was waived. *See, Shell Oil Co. v. Department of Revenue*, 461 So.2d 959, 963 (Fla. 1st DCA 1984) (issues not raised in the brief or at oral argument cannot be raised for the first time on motion for rehearing).

B. Harmlessness⁹

There is no reason to believe that a further review would yield any different result. *Frye* testing requires only the reliability of the “basic underlying principles of scientific evidence.” *Brim I*, 695 So.2d at 272. At oral argument in the First DCA, USS acknowledged that acute exposures to the subject pesticides are generally accepted to be neurotoxic. *U.S. Sugar v. Henson*, 787 So.2d at 9; *see also e.g., Gronbeck v. Schweiker*, 534 F.Supp 642 (D. S.Dak. 1982)(doctors agreed that temporary paralysis on left side, could be attributed to 2-4,D exposure).

The chronic neurotoxicity of these pesticides is also well-established. *See, Casarett & Doull's Toxicology*, 5th ed. (1996)¹⁰ (p. 15, acute exposure to agents that

⁹ This sub-point correspond to sub-point D in USS's brief. That sub-point is apparently designed to preempt a harmless error argument, so as to “protect” its only alleged ground for reversal (the procedural errors alleged in its sub-point B). Whether one views this appeal as posing three issues or four, it is plain that USS must “run the table” and convince this Court as to each in order to avoid immediate payment of benefits. A victory by Mr. Henson on any issue (the certified question, the lack of procedural error, harmless, or waiver) will moot all of the others.

¹⁰ The First DCA quoted from the Second and Third Editions of this text (relied upon by Dr. Bowsheer), as follows:

Organophosphate insecticides in common use are rapidly biotransformed and excreted, and subacute or chronic

are rapidly absorbed is likely to produce immediate toxic effects but also can produce delayed toxicity that may or may not be similar to the toxic effects of chronic exposure, conversely chronic exposure to a toxic agent may produce some acute effects after each administration in addition to the long-term, low-level or chronic effects of the toxic substance; p.697, chronic exposure to inorganic arsenic compounds may lead to neurotoxicity to both peripheral and central nervous systems; peripheral neuropathy may be progressive, involving both sensory and motor neurons leading to demyelination of long axon nerve fibers; more chronic occupational exposures, producing more gradual insidious effects, may occur over a period of years, for which it has been difficult to establish dose-response relationships); *Lewis' Dictionary of Toxicology* (1998) (long-continued exposure to 2,4-D can produce severe, protracted peripheral

poisoning by virtue of accumulation of the compounds in the body does not occur. However, because several of the organophosphates produce slowly reversible inhibition of cholinesterase *accumulation of the effect* can occur. Signs and symptoms of poisoning that resemble those produced by a single high dose will occur when the accumulated inhibition of cholinesterase produced by smaller, repeated doses reaches a critical level.

Id. at 530(emphasis in original). USS claims that this passage is obsolete science based on the omission of this passage from subsequent editions of that text. This argument ignores the fundamental agreement of the most recent edition of the text with the basic premise of chronic toxicity and the absence of any significant intervening research development to justify such an inference of obsolescence. This is also an argument which was waived by USS's failure to make it until its motion for rehearing on appeal, as Dr. Bowsher's reliance on the prior edition of the text was clearly stated at his deposition (R. 2116-17)

neuropathy); *Goodman & Gilman's The Pharmacological Basis of Therapeutics*, 9th ed. (1996) at p.171 (experimental myopathies that result in generalized necrotic lesions and changes in end-plate cytostructure also are found after long-term treatment with organophosphates); Donald P. Morgan, M.D., Ph.D., *Recognition and Management of Pesticide Poisonings*, 3rd Ed. (1982) (pp. 2-3, very rarely, organophosphate pesticides have produced a different type of neurotoxicity, consisting of damage to the myelin substance of peripheral nerves, leading to protracted peripheral neuropathy); M. Kamrin, *Pesticide Profiles: Toxicity, Environmental Impact, and Fate*, p. 305-06 (1997) (study showing chronic toxicity of 2,4-D); *see also*, Official EPA Handbook, "Protect Yourself From Pesticides -- Guide for Pesticide Handlers" (1994) (R.1566) (discussing chronic health risks of pesticides, including neurological effects); *FQPA Safety Factor Recommendations for the Organophosphates*, Health Effects Div., Office of Pesticide Programs, Env't'l Protect. Agency at pp. 15-18 (August 6, 1998)(chlorpyrifos neuropathology risk assessments relevant for acute and chronic risks); *Kannankeril v. Terminix Intern., Inc.*, 128 F.3d 802, 809 (3rd Cir. 1997)(discussing expert testimony and summaries of reports of delayed and chronic effects of exposure to organophosphates); *Serrano v. E.I. Dupont de Nemours and Co.*, 797 F.Supp 98 (D. Puerto Rico 1992)(plaintiff diagnosed with polyneuropathy secondary to chronic occupational pesticide exposure); *Romah v. Hygienic Sanitation Co.*, 705 A.2d 841 (Pa. Super. 1997)(claimant's partial paralysis attributed to chronic

durban exposure); *Maritime v. Ellis*, 886 S.W.2d at 780(discussing EPA study of individuals chronically exposed to organophosphate pesticides).

USS's insistence that only peer-reviewed journals can form the foundation of a reliable medical opinion is legally incorrect. *See, Kannankeril*, 128 F.3d at 806 (approving doctor's pesticide causation opinion made in reliance on his general medical knowledge, standard textbooks, and standard references); *In re Joint Eastern & Southern Dist. Asbestos Litigation*, 52 F.3d 1124, 1135 (2nd Circ. 1995)(criticizing trial court for overlooking federal government reports concluding that a causal relationship exists). It is also inconsistent with USS's own conduct in attaching excerpts from *nine* medical textbook to its Initial Brief in the District Court.

Because of the need for large populations for statistical purposes, epidemiological evidence is often unavailable regarding substances that are not designed for human consumption. *E.I. DuPont De Nemours & Co. v. Castillo*, 748 So.2d 1108, 1116 (Fla. 3d DCA 2000). Moreover, some propositions are too particular, too new, or of too limited interest to be published. *Daubert* 509 U.S. at 593, 113 S.Ct. at 2797; *see also, Ambrosini v. Labarraque*, 101 F.3d 129, 134 (D.C. Circ. 1996)(proposition ignored because drug no longer prescribed for pregnant women).

Phrenic nerve palsies are uncommon outside of the realm of trauma and, given their rarity, one would never expect to see a research project conducted on that specific relationship (R. 1220). Moreover, given USS's workplace practices and Henson's 28

year career as a field mechanic, Mr. Henson may well be the most *chronically* exposed person in history. There simply is no similarly exposed population to be studied.

The seminal case on this point is *Ferebee v. Chevron Chemical Co.*, 736 F.2d 1529 (D.C. Cir. 1984). Chevron took the familiar position that chronic injury was impossible, arguing that paraquat was only acutely toxic and that when exposure ceased so did the injury. The Court applied the *Frye* standard, stating in an oft-cited passage:

That Ferebee's case may have been the first of its exact type, or that his doctors may have been the first alert enough to recognize such a case, does not mean that the testimony of those doctors, who are concededly well qualified in their fields, should not have been admitted.

Id. at 1536. The *Ferebee* court similarly rejected the notion that the cause-effect relationship needed to be clearly established by animal or epidemiological studies as a predicate for physician testimony on causal relationship:

[P]roducts liability law does not preclude recovery until a "statistically significant" number of people have been injured or until science has had the time and resources to complete sophisticated laboratory studies of the chemical.

Id. at 1535-36; *see also, Lakie v. SmithKline Beecham*, 965 F.Supp. 49, 57 (D. D.C. 1997)(not probative that experts' theories regarding relatively rare disorder have not been published, especially where link to analogous condition has been established).

The contrary notion, that the narrow particulars of a given case must be epidemiologically established, is positively refuted by the language of *Frye*, itself:

...while courts will go a *long way* in admitting expert testimony *deduced* from a well-recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.

Frye, supra at 1014, *quoted in, Brim I*, 695 at 273 (emphasis added).

The “fit” between an accepted scientific principle and the particulars of a given case is not always obvious and scientific validity for one purpose is not scientific validity for another. *Daubert*, 509 U.S. at 591 113 S.Ct. at 2796. It is rare that questions of fit will have become sufficiently crystalized to have created a general view in the scientific community. Such cases then must turn upon a judgment call. How far can deductive or analogic reasoning be stretched before it breaks? *Frye* tells us that the answer is “a long way.” More recent authorities demonstrate that we are not even close to that breakpoint here.

In *Kennedy v. Collagen, Corp.*, 161 F.3d 1226, 1230 (9th Cir. 1998), the Court found that the analogy between “drug induced lupus” (upon which research existed) and “collagen induced lupus” (upon which it did not) was a “close one,” sufficient to support the experts’ “analogical reasoning” based on objective, verifiable evidence and scientific methodology of the kind traditionally used in the field.

In *Paoli*, 35 F.3d at 745, the Court held that testimony that PCBs cause liver cancer fit the case, even in the absence of a plaintiff with liver cancer, because an expert’s affidavit suggested that increased risk of liver cancer was probative of

increased risks of other forms of cancer.

While *Frye* accepts “extrapolation” as an acceptable method, see *City of Greenville v. W. R. Grace & Co.*, 827 F.2d 975, 980 fn. 2 (4th Cir. 1987), extrapolation is not even necessary here, given that the phrenic nerve is a peripheral nerve and given the textbook proposition that pesticides cause peripheral neuropathy. As such, this case is actually more akin to *Asbestos Litigation*, 52 F.3d at 1136, where the plaintiff’s pointed to OSHA and EPA conclusions of a causal link between exposure to asbestos and gastrointestinal cancer. The defendant claimed that such evidence was insufficient in connection with the plaintiff’s colon cancer. The Second Circuit Court disagreed:

That both the EPA and OSHA reports focused on the broader area of gastrointestinal cancers (which include cancers of the esophagus, stomach, rectum, as well as the colon) – rather than specifically on colon cancer – is no argument to disregard them.

Id. at fn. 20.

Similarly, in *Duran v. Cullinan*, 677 N.E.2d 999, 1012 (Ill. App. 1997), the plaintiffs pointed to 43 studies showing that oral contraceptives cause birth defects. The defendants relied on the fact that the literature did not mention the exact defects suffered by the plaintiff. While the trial court was convinced that such “extrapolation” was impermissible, the Court of Appeals reversed¹¹.

¹¹The instant case is not one where the defendant can point to a body of overwhelming contrary evidence positively establishing that pesticides cannot cause phrenic nerve paralysis or that the phrenic nerve should be considered

Phrenic nerve paralysis is typically the result of trauma, commonly from the severing of the nerve during heart surgery (R. 2714). Since there was no history of any such trauma, Henson's physicians were able to exclude this most common cause. Similarly, there was no evidence that cigarettes cause such disorders and the lab tests ruled out any cancerous etiology (Dr. Sanchez-Ramos' rank speculation aside). *See, Mendes-Silva v. U.S.*, 980 F.2d 1482, 1487 (D.C. Circ. 1993) (defense attorney's allusion to rare virus as possible alternative cause was issue for fact-finder). This left only pesticide exposure and diabetes as plausible explanations. The overwhelming majority view of the doctors in this case (joined in by USS's expert, Dr. Rubenstein) was that Henson's diabetes arose only in *response* to the steroids administered to treat Henson's respiratory failure and that the diabetes thus did not exist in the correct time-frame (certainly not with the severity and duration that would have been necessary) to cause the subject phrenic nerve damage (R. 1162-64, 2154, 2711, 2715, 2779).

The elements of a differential diagnosis may consist of the performance of physical examinations, the taking of medical histories, and the review of clinical tests. A doctor does not have to employ all of these techniques in order for his diagnosis to

fundamentally different from other peripheral nerves. *See Ambrosini*, at 139. The study which USS primarily relies upon was conducted by Dow Chemical Co.(R. 1214, 1251), involved its own factory workers and *assumed* that the chemicals posed no chronic risks so that it was unnecessary to even *attempt* measuring chronic effects (R. 1253). This study was not relied upon by USS's experts and USS chose to only ask one of Henson's experts about it.

be reliable. *See, Paoli* 35 F.3d at 759; *Kannankeril*, 128 F.3d at 807. Henson's physicians utilized the same basic differential diagnosis approach as the physicians for USS. They reviewed medical tests results, claimant history, examined the claimant, and reviewed the relevant medical literature. They simply drew contradictory conclusions from the same methodology. This framed a classic "battle of the experts;" a battle in which the fact-finder decides the victor. *See, Ferebee*, 736 F.2d at 1529.

Our inability to measure or discover all workplace accidents is the reason that Florida's workers' compensation law created the "exposure" doctrine. *See Florida Power Corp. v. Stenholm*, 577 So.2d 977, 980 (Fla. 1st DCA 1991). Because of the practical difficulties in measuring chronic occupational exposures, courts have consistently held that evidence of substantial exposure by worker history is sufficient. *See Westberry* 178 F.3d at 264; *Meehan v. Crowder*, 28 So.2d 435 (Fla. 1946); *Shook*, 425 So.2d at 164; *Joiner*, 522 U.S. at 139, 118 S.Ct. at 515-16.

In *Wiley v. Southesast Erectors*, 573 So.2d 946, 949 (Fla. 1st DCA 1991), the court held that even absent proof that the claimant's manipulation of the fireproofing material resulted in particles small enough to be respirable, the plaintiff's expert offered sufficient testimony to support a reasonable inference that this was the case, requiring reversal of a non-compensability finding. *Wiley* is just the latest in a long line of Florida workers' compensation cases that have held that specific chemical tests are not essential to prove causation, *See, Smith v. Crane Cams, Inc.*, 418 So.2d 1266, 1269

(Fla. 1st DCA 1982); *King Motor Co. v. Pollack*, 409 So.2d 160, 164-65 (Fla. 1st DCA 1982); *Lake v. Irwin Yacht & Marine Corp.*, 398 So.2d 902 (Fla. 1st DCA 1981).

In *Westberry*, 178 F.3d at 264, the Fourth Circuit Court quoted from the Federal Judicial Center Reference Manual on Scientific Evidence at p. 187 (1994):

Only rarely are humans exposed to chemicals in a manner that permits a quantitative determination of adverse outcomes. . . . Human exposure occurs most frequently in occupational settings where workers are exposed to industrial chemicals like lead or asbestos; however, even under these circumstances, it is usually difficult, if not impossible, to quantify the amount of exposure.

See also, Kannankeril, supra at 808-09 (the issue of whether a negative air test should be given more weight than pesticide application records goes to weight, not admissibility); *Peteet v. Dow Chemical Co.*, 868 F.2d 1428, 1432, fn. 4 (5th Cir. 1989) (admitting toxicologist's testimony premised upon claimant's testimony as to the extent of his exposure to 2,4-D); *Junge v. Garlock, Inc.*, 629 A.2d 1027, 1028 (Pa. Super. 1993) (plaintiff need only show regularity, frequency, and proximity to workplace asbestos; testimony by industrial hygienist unnecessary)¹².

USS unsuccessfully "refined" its position at oral argument in the First DCA, focusing for the first time on the unilateral nature of Mr. Henson's neuropathy. In its

¹²While USS attempts to rely upon industry TLV and PEL standards, these standards address only ambient air levels, failing to address safe levels for dermal contact which the expert witnesses in this case thought to be the most significant mode of pesticide absorption. *See Berry, supra* at 561.

initial brief to this Court, it has taken a new tack, pointing to a supposed “proximally before ... distally” flaw (Initial Brief at pp.48-49). Not only does USS argue this “refinement” here for the first time, it does so without citation to authority.

A plaintiff’s idiosyncratic response to a particular material has long been recognized as compensable under Florida’s workers’ compensation law. *See e.g. Wiley* 573 So.2d at 947. By its insistence on epidemiologic proof duplicating the narrow particulars of the given case (the constant refinement of which could potentially bar all claims), USS has attempted to alter this substantive rule of law through the evidentiary back door. The JCC and the First DCA were correct in rejecting those efforts.

POINT III

USS WAIVED ANY *FRYE* OBJECTION BY FAILING TO OBJECT UNTIL THE EVE OF TRIAL.

USS did not assert a *Frye* objection at the depositions of any of Henson’s physicians. Instead, it made terse “90.702” objections, without any elaboration that would put Henson on notice that a *Frye* objection was coming.

In *Hadden*, 690 So.2d at 580, this Court stated:

Moreover, it is only upon proper objection that the novel scientific evidence offered is unreliable that a trial court must make this determination. Unless the party against whom the evidence is being offered *makes this specific objection*, the trial court will not have committed error in admitting the evidence.

(e.s.). Thus, While Henson would admittedly bear the ultimate burden of proof, it was

USS's burden to first plead the narrow reasons why it maintained that a lack of scientific consensus existed. *Brim II*, 779 So.2d at 447.¹³

Frye objections need to be made with sufficient timeliness that the offering party has an opportunity to cure any defect that may exist and avoid being subjected to trial by ambush. *See Maritime Overseas v. Ellis*, 971 S.W.2d at 409. As a practical matter, this means that the precise objection needs to be made prior to the taking of the expert depositions so that they can focus economically and efficiently on the points that need elaboration. E. Mahaney, *Assessing the Fitness of Novel Scientific Evidence in the Post-Daubert Era: Pesticide Exposure Cases as a Paradigm for Determining Admissibility*, 26 *Envtl. L.* 1161, 1175 (1996).

These concerns are magnified by the unique nature of workers' compensation cases. As the First DCA explained below:

In the present case, as in many worker's compensation proceedings, the claimant's expert testimony was presented by deposition. At the time of the depositions, neither the claimant nor the expert witnesses were on notice that a *Frye* test was sought as to the admissibility of the expert testimony. Thus, neither claimant's counsel nor the witnesses knew to have available texts, scientific literature, or studies which would support a conclusion that the scientific principles on which their testimony was based is

¹³This Court may affirm on any ground appearing of record, whether or not it was raised below. *See Dade County School Bd. v. Radio Station WQBA*, 731 So.2d 638 (Fla. 1999). "Preservation" concepts do not apply to appellees. *Id.* Thus, the fact that this waiver issue was raised for the first time by the First DCA at oral argument is immaterial.

generally accepted in the relevant scientific community.

Henson, 787 So.2d at 13.

USS did not make its *Frye* objection until two days before trial. This was too late, waiving the objection. *See also*, Fla. R. Work. Comp. Pro. Form 4.910 (issues not specifically raised are waived); *Oak Const. Co. v. Jackson*, 522 So.2d 1068, 1072 (Fla. 1st DCA 1988) (enforcing waiver); Fla. R. Civ. Pro. 1.330(d)(3)(A) (objections which might be obviated if made at deposition are waived if not presented at that time).


CONCLUSION

The certified question should be answered in the negative and the decision of the First DCA otherwise affirmed. Mandate should issue forthwith.

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CERTIFICATE OF SERVICE

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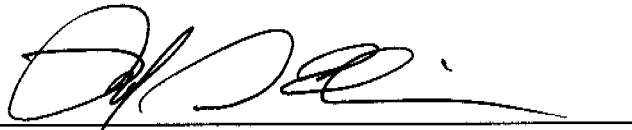


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CERTIFICATE OF TYPE SIZE & STYLE

In accordance with Florida Rules of Appellate Procedure, *Rule 9.210(a)(2)*, as amended effective January 1, 2001, undersigned counsel hereby certifies that this brief complies with the font requirements of the Rule: Times New Roman 14-point font.



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