

1 Michael J. Miller (appearance *pro hac vice*)
2 Timothy Litzenburg (appearance *pro hac vice*)
3 Curtis G. Hoke (State Bar No. 282465)
4 **The Miller Firm, LLC**
5 108 Railroad Ave.
6 Orange, VA 22960
7 (540) 672-4224 phone; (540) 672-3055 fax
8 mmiller@millerfirmllc.com
9 tlitzenburg@millerfirmllc.com
10 choke@millerfirmllc.com

11 *Attorneys for Plaintiff*
12 **DEWAYNE JOHNSON**

ELECTRONICALLY
FILED
*Superior Court of California,
County of San Francisco*
06/08/2018
Clerk of the Court
BY: VANESSA WU
Deputy Clerk

13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF SAN FRANCISCO

DEWAYNE JOHNSON,

Plaintiff,

v.

MONSANTO COMPANY

Defendants.

Case No. CGC-16-550128

**DECLARATION OF CURTIS G. HOKE IN
SUPPORT OF PLAINTIFF'S OPPOSITION
TO MONSANTO'S MOTION *IN LIMINE* 10
TO EXCLUDE BENBROOK'S OPINIONS
REGARDING PERSONAL PROTECTIVE
EQUIPMENT**

Trial Judge: TBD

Trial Date: June 18, 2018

Time: 9:30 AM

Department: TBD

I, Curtis Hoke, declare and state:

1. I am an attorney at law admitted to practice before all of the courts in the state of California. I am an attorney at The Miller Firm, LLC, attorneys of record for Plaintiff Dewayne Johnson. I am over eighteen years of age and am fully competent to make this Declaration in support of Plaintiff's Opposition to Defendant's Motion in Limine No. 10 to Exclude Benbrook's Opinions Regarding Personal Protective Equipment. Except as otherwise expressly stated below, I have personal knowledge of the facts stated in this declaration, and if called to testify, I could and would competently testify to the matters stated herein.

3. Attached hereto as **Exhibit B** is a true and correct copy of portions of the expert report of Charles Benbrook.

Executed on June 7, 2018 in Orange, Virginia.

By:

Curtis G. Hoke,
Declarant

EXHIBIT A

TCAS

Toxicology Consultants & Assessment Specialists, LLC

6450 Pine Avenue, Sanibel, FL 33957

29 Fennell Street, Skaneateles, NY 13152

(239) 472-2436 [FL] (315) 685-2345 [NY] (800) 308-0080

E-mail: drsawyer@experttoxicologist.com & Website: experttoxicologist.com

Toxic Exposures · Environmental Testing · Risk Assessment · Forensic Toxicology · Causation Evaluation

**Toxicological Assessment of Dewayne Johnson and Toxicological Risk
Assessment of Glyphosate and Roundup® and Ranger PRO® Formulations**

William R. Sawyer, Ph.D., D-ABFM
Toxicologist

December 21, 2017

Prepared for

Michael J. Miller, Esq.
Jeffrey A. Travers, Esq.
Timothy Litzenburg, Esq.

The Miller Firm, LLC
108 Railroad Avenue
Orange, VA 22960

and even down into his gloves. (Pg. 92) However, there was no burning or itching associated with his exposure.

Mr. Johnson testified that he finished the working day but did not take a shower until he got home later that day after leaving work at 2:30 pm.²⁵ He estimated that the exposure happened approximately at 8:30 am that day. (No date given for this exposure but *prior* to his lymphoma diagnosis.) (Pg. 85)

- He further testified that no incident report was written up for this.
- The machine held 50 gallons of water and a percentage of pesticide was added to the water depending on what plant was being targeted.²⁶ *"Ivy or pampas grass has a higher ratio of pesticide in the water"* than what would be used for annuals. *"You might have a five percent mix, you might have a ten percent mix."* (pg. 86)
- He also described further exposures on his face and hands due to drift from the machine whenever he used it. *"I had no control over the drift. This machine was built by the supervisor. There was no way to regulate your pressure."* (pg. 78).
- Although he wore a Tyvek jumpsuit, boots, mask and goggles, the suit was not sealed and there was an opening at the arms, legs and neck. *"All my face... ears, neck, all that is exposed."* (pg. 80)
- The second exposure happened less than a year before this deposition. He took a backpack out to spray and *"you kind of get sweaty out there working and a little damp sometimes. So I didn't really worry. And then my back started to feel wet and that's when I came back to the office and realized that I had a back full of pesticide."* He went to Kaiser and was checked out. He specifically noted that he already had the skin condition at this time. He testified that he was told his skin condition was related to his family's history, but no such history exists. *"I don't have anybody in my family that has had anything like what I have on my skin."* (pg. 34)
- Mr. Johnson testified that when being trained on pesticide application *"the teachers teach that it's just like water. That glyphosate glycine is just like water and you can*

²⁵ He did try to clean up with water and paper towels at work and removed his Tyvek suit.

²⁶ On page 90, he states that he had been spraying for annuals during this exposure and was spraying at a rate as required in the Ranger Pro® manual.

Part E: Dose Calculations Relevant to Dewayne Johnson

Mr. Johnson used Ranger Pro® composed of 41% glyphosate and 8% surfactants which include tallowamine (POEA), polyethylene glycol (PEG), phosphate ester and dipropylene glycol. Additionally, he used Roundup® composed of 18% glyphosate.

As discussed in detail earlier in this report, Mr. Johnson mixed the Ranger Pro as per the pamphlet using 10 ounces of product to 5 gallons of water. However, he notes that the formulation could be stronger in certain applications. He has also testified spraying between 20-40 pesticide applications yearly (for 2-5 hours),²⁷⁴ but deposition testimony reports a higher application frequency for more than 2 years prior to his T-cell lymphoma diagnosis.

Mr. Johnson also details high level, severe (upper body soaking) acute exposures. Mr. Johnson testified that he experienced drift exposure “*all the time.*” There was no way to control the drift even by spraying on calm days or changing out nozzles to increase droplet size. During spraying, Mr. Johnson used personal protective equipment including gloves, boots, a “*sweatshirt-type hoodie,*” a permeable Tyvek suit, hat and goggles. (Although Mr. Johnson wore a Tyvek suit, it was apparently the fine cloth type as he explained that drift passed through it leaving him wet). Mr. Johnson testified that he was spraying sites at five different school locations at different times.

During Mr. Johnson’s first high level, acute exposure, he testified that he was soaked with glyphosate when a hose broke off the 50 gallon pump unit and he attempted to access the unit to shut it off. “*The hose came [dis-attached] from the back of the truck and it was just juice everywhere, flying out the back of the truck. So that’s when I had to hop in because the switches are in the back. There’s no safety switch there ... I reach in the back there and turn it off and that’s when I got it on the back of my neck and the back of my head and everywhere and on my face.*”²⁷⁵

²⁷⁴ Mr. Johnson testified, “...spraying sites at five different school locations at different times, usually would spray no more than 4-5 hours per day.”

²⁷⁵ At 12:37, he stated. “Cause it got down to my neck and got down to about the tip of my shoulder. I was able to rinse a lot of that off. I don’t know if I’m wiping it in or I’m taking it off. ..But I’m using what I had at the time.”

Mr. Johnson testified that there were noticeable and visible consequences of his initial exposure. He stated, "*When I got ahold of that liquid on my skin that day, it got red, it got irritated. I finished the day off. It was seven hours. Maybe six hours.*" Mr. Johnson testified there were also other accidental high level exposures.

Mr. Johnson's exposure history falls within the parameters of "*The Agricultural Health Study*" Cohort in Table 27 (also see Tables 25, 27, 29 highlighted in yellow) which places him below the median exposures. Mr. Johnson worked as a mixer/applicator more than 40 days per year for approximately 2.25 year which results in over 90 exposures days. This represents a very conservative estimate as the acute soaking exposure doses left on the skin for prolonged periods of time were not included and would have resulted in much higher absorbed doses based on the referenced dermal absorption studies. Compared to "*The Agricultural Health Study*" Cohort in Table 27, Mr. Johnson's exposure frequencies were in the upper range of the table; however, his 2.25 years of application service was at the lower end. The extremes in both directions place him near the midpoint of the table.

Thus, it is my opinion that Mr. Johnson reasonably qualifies as an exposed glyphosate spray operator using a hydraulic nozzle (Table 29) with additional acute soaking exposures. His dosage can also be approximated from Tables 25 and 29; however, Mr. Johnson's high level acute exposures are not accounted for in these tables.

It should also be noted that, due to the persistent flash-back of aerosol due to building structure interference, Mr. Johnson's inhaled dose may have been higher than that shown in Tables 25 and 29.

EXHIBIT B

**SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF SAN FRANCISCO**

DEWAYNE JOHNSON,

Plaintiff,

v.

MONSANTO COMPANY,

Defendants.

Case No. CGC-16-550128

EXPERT REPORT OF CHARLES BENBROOK

5. The opinions in this report are based on my education, experience, review of the documentation, and independent research. These opinions are held to a reasonable degree of certainty.

A. Focus of Case

6. This case is about the way Dewayne Johnson used and applied RangerPro and Roundup ProConcentrate in the course of carrying out job-related, weed management duties for the Benicia Unified School District.

7. Dewayne Johnson applied glyphosate-based herbicides in 2012-2014. In those years, farmers and ranchers applied about 90.3% of the total pounds of glyphosate herbicide used in the U.S., while non-agricultural uses accounted for about 9.7%. (Benbrook C. [2016]. Trends in glyphosate herbicide use in the United States and Globally, *Environmental Sciences Europe* Vol 28:3; DOI 10.1186/s12302-016-0070-0).

8. Of the 9.7% of total glyphosate use that is non-agricultural, I estimate that at least two-thirds of that was applied on golf courses, along roads and rights-of-ways (railroad tracks, power lines), and on industrial facilities. The majority of these non-ag applications were carried out using mid- to large-scale spray equipment with cabs and air filtration systems, or by airplanes or helicopters.

9. Hence, glyphosate applications made using a hand held or backpack sprayer likely accounted for under 3% of the total U.S. use of glyphosate-based herbicides in the 2012-2014 period.

10. Government statistics, and the records in this case, show that over the years, a highly disproportionate share of the glyphosate-related, worker-safety poisoning and illness episodes arise from hand-held, backpack, or other application methods that result in markedly

higher exposures and risks than typical, larger-scale applications of Roundup.

11. By “highly disproportionate,” I mean, for example, one-half or more of the reported, glyphosate-based herbicide illness episodes arise from hand held/backpack applications of the herbicide that account for well less than 3% of the total volume of glyphosate applied.

12. The reason is clear. Most glyphosate applied on farms is sprayed using large equipment with enclosed cabs that have air filtration systems, where the operator/driver/pilot is far-removed from the spray, and also protected from exposure by a glass/metal cab and an air filtration system.

13. The sizable differential in routine, expected exposures between ag and many non-ag uses of glyphosate arises because of the proximity of people using a hand held or backpack sprayer to the spray solution, their need to walk within and through an area that was sprayed just minutes before, the absence of a barrier or shield to protect them from spray drift, and the absence of an air filtration system (since a respirator is not required on any Roundup labels).

14. Since the 1980s, Monsanto has known that individuals applying a glyphosate-based herbicide through a hand-held or backpack sprayer face markedly higher exposures and risks, especially on windy days.

15. The company has also known that risks are higher for individuals that apply the herbicide for many days a year and/or many hours during a given day, yet there are no statements on Roundup labels or label provisions that require stricter worker protection measures as a function of how many hours in a work week, or over a year, that a person sprays glyphosate herbicides as part of their job.

16. Accordingly, a key question at the heart of this case is whether Monsanto acted responsibly in the face of information pointing to greatly elevated exposures and risks of cancer,

3. Monsanto Recognized that the Drift of Roundup Herbicides onto Applicators Using Backpack Sprayers Could Pose Excessive Risk

554. Throughout the 1990s and 2000s, Monsanto aggressively resisted efforts by U.S. and European regulators to place more restrictive worker-safety requirements on Roundup products labeled for use in non-agricultural settings.

555. Regulators in the EU and U.S. were concerned about growing evidence of worker poisoning episodes, as well as the impact of POEA surfactants on the worker risks posed by formulated Roundup herbicides.

556. Monsanto was well aware of the concerns, because there had been a steady flow of new information from their ongoing research and testing around the world that pointed to the need to address high-exposure scenarios and eliminate high-risk surfactants, at a minimum.

557. Regulators in the UK required Monsanto to add a requirement for respiratory protection on certain Roundup labels, as a result of high-exposures around the face when Roundup is applied to trees via a backpack sprayer. (MONGLY06454420)

558. EU forced Monsanto to phase out POEA surfactants in a wide range of Roundup products, a task completed by or around 2010.

559. But in the U.S., Monsanto blocked or curtailed more restrictive worker-safety language on most formulated product labels in the U.S., and retained POEA surfactants in products from which they had been removed in the E.U.

560. In many internal emails and technical presentations (e.g., Powerpoints for scientific staff), Monsanto acknowledges that:

- POEA surfactants increase the risk of worker-safety problems;
- Safer and equally effective alternative surfactants exist, albeit sometimes at higher cost; and
- Regulators will eventually force elimination of POEA surfactants and the addition of new worker-safety requirements.

561. In several instances during which Monsanto employees debated when and whether to make changes in Roundup product formulations and/or add new requirements to reduce worker risks, one or a group of employees voiced the opinion (paraphrasing) “why not just make the changes now?”

4. Monsanto Efforts to Address Concerns over Worker-Risk Assessments

562. [REDACTED], a European-based Monsanto scientist, sent a November 10, 2008 email to his Monsanto colleagues Saltmiras, [REDACTED], Farmer, and Kronenberg. In it, [REDACTED] shares his strongly held view that Monsanto needed to conduct additional studies to obtain better data to address lingering worker-exposure concerns across Europe.

563. The new data and analyses that [REDACTED] was advocating would be included in an Annex to the dossier Monsanto was developing for submission to the German regulatory authority, as part of the re-registration of glyphosate in the EU.

564. In his email, [REDACTED] writes: “Dermal exposure is the greatest risk of exposure to operators. Therefor we need to be secure on the ADME of such exposure.” ADME stands for Absorption, Distribution, Metabolism, and Excretion. (MONGLY02155827)

565. A few days earlier (November 7, 2008), Garnett had sent an email to Monsanto colleagues, including [REDACTED] a Monsanto employee based in Germany who was interacting with BfR on glyphosate re-registration issues.

566. [REDACTED] 11/7/2008 email outlines the topics of discussion on a call addressing adverse worker-exposure episodes the BfR was aware of. Four areas of “preparation” for future interactions with BfR were outlined, including: “3. Toxicology: counter the allegation on synergistic effects of tallow amine [POEA surfactants] with glyphosate.” (MONGLY010122033)

567. Achieving this goal would require a successful effort by Monsanto to downplay

the relevance, or reliability of the many published studies showing that formulated Roundup products containing POEA surfactants were more toxic than 100% pure glyphosate alone.

568. In several instances, new data called for by a specific regulatory agency in Europe, South America, or some other foreign country, led Monsanto to conduct new studies that were submitted to the specific regulator that had asked for new or better data.

569. In many cases, such new studies called into question the accuracy of critical parameters and assumptions embedded not just in Monsanto's worker-safety risk assessments, but also the risk assessments carried out by most regulators worldwide.

570. Regulators in Italy and Germany were, in particular, concerned over data published in several peer-reviewed journals showing that Roundup products formulated with POEA surfactants pose greater risks than glyphosate alone, because POEA is more toxic than glyphosate, and the POEA in Roundup products increases the portion of glyphosate that penetrates the skin and cell walls.

571. Regulators base their glyphosate worker-risk assessments on data provided predominantly by Monsanto. If the data from Monsanto is not current or is inaccurate, regulatory risk assessments will also be inaccurate, and hence may poorly reflect actual risks in the field.

572. The failure of Monsanto to submit to the EPA and other regulators updated, more accurate data, as it becomes available to the company, delays the actions that the EPA and other regulators would need to take to produce more accurate, realistic worker-risk assessments.

573. Keeping regulators in the dark, by failing to share new information it gained from its internal research, was a common tactic Monsanto relied on to delay or block stricter worker-safety label requirements. In the U.S., some such failures likely violate the so-called "adverse effects reporting requirement" set forth in Section 6(a)(2) of FIFRA.

574. In the record of this case, there are many instances where Monsanto became aware from its internal research, or studies required by a given country, that some component or parameter in its worker-risk calculations probably, or surely understated actual worker risks.

575. Consistently in such cases, Monsanto's responded in two ways. First, the company would assess whether there was a way to generate new data that contradicts, obscures, or renders irrelevant the new information that suggested current worker risks were understated.

576. Second, and typically on a parallel track, Monsanto would deploy a variety of strategies to avoid having to share such new information with regulators, even when they were seemingly obligated to do so under law.

577. In the interim, Monsanto would often change formulations, or voluntarily alter label provisions in a way that preempted the need to update risk assessments or label requirements. This tactic has often been successfully deployed by Monsanto to hide past sins of omission (i.e., not informing regulators that the risks associated with a given use of Roundup are likely higher than currently estimated).

5. BiF Pushes Monsanto on Worker Risks

578. There is a particularly germane example of these Monsanto behaviors in the company's internal deliberations on how to deal with growing concerns in Europe over worker-exposures and risk.

579. The German regulatory authority, the BfR, was the rapporteur for the EU re-registration review of glyphosate. They had raised with Monsanto concerns over the heightened risk of formulated Roundup herbicides containing POEA surfactants, compared to risks based on data derived from studies focused on 100% pure glyphosate.

580. A published, peer-reviewed genotoxicity paper came out in 2007 that no doubt

was among the papers triggering new concerns in Europe over formulated Roundup products. It was entitled “Cytotoxicity of the herbicide glyphosate in human peripheral blood mononuclear cells (Martinez A, Reyes I, Reyes N, *Biomedica* 27(4):594-604). The results and conclusions sections from the abstract of the paper follow:

RESULTS:

Both technical grade glyphosate and Roundup formulation were toxic to human peripheral blood mononuclear cells. Cytotoxicity of Roundup was higher than cytotoxicity of glyphosate, since the LC50 (50% lethal concentration) determined by the trypan blue exclusion method at 24 h was the equivalent of 56.4 microg/ml of glyphosate in the form of Roundup and 1,640 microg/ml (1.64 mg/ml) for technical grade glyphosate.

CONCLUSIONS:

This in vitro study confirmed the toxic effects on human cells by glyphosate and its commercial preparations. Commercial formulations were more cytotoxic than the active component alone, supporting the concept that additives in commercial formulations play a role in the toxicity attributed to glyphosate-based herbicides.

581. It is worth highlighting that under the conditions of the 2007 Reyes et al study, the glyphosate-plus-surfactants in formulated Roundup products were 29-times more cytotoxic than pure glyphosate. A 29-fold increase in any pesticide-related risk is substantial and would typically trigger a re-assessment of current risk estimates, and often as a result, changes in relevant label provisions require by the EPA and other regulatory authorities.

582. Plans and initiatives to deal with such concerns were a primary focus of a “Glyphosate Toxicology Peer Review” meeting held in London on June 22, 2007. Three senior, corporate Monsanto scientists were present (Donna Farmer, [REDACTED], [REDACTED]), and a fourth participated via the phone ([REDACTED]). The experts in attendance were Professor [REDACTED] is listed as “Consultant.”
(MONGLY0118777)

583. One section of the meeting overview document is entitled “NOTES TAKEN

DURING THE PRESENTATIONS.” It includes sections addressing the most controversial and consequential issues facing Monsanto in preserving its glyphosate-related FTO (Freedom to Operate) in Europe: carcinogenicity, endocrine disruption, co-formulants, and operator exposure.

584. Under “**4. Operator exposure**,” there is a section setting forth “**Proposals for Action**.” The first bulleted item reads: “Label recommendations for hand held spraying should include recommendation for using shields and not walking through the spray or sprayed area.

ACTION: [REDACTED]” (MONGLY0118777)

585. Recall that the EPA-required worker-safety rules in the 1986 glyphosate Registration Standard document included a requirement for goggles or a face shield. This requirement is still not on the RangerPro label in the U.S., the herbicide that accounted for most of the glyphosate-based herbicide that Dewayne Johnson applied.

586. In the phrase “**ACTION:** [REDACTED],” [REDACTED] stands for [REDACTED], who was head of Regulatory Affairs for Monsanto in Europe and would be responsible for submitting new or revised glyphosate-based herbicide label directions, including worker-safety requirements, to regulatory authorities.

587. A few years earlier, Monsanto commissioned new studies on the rate of dermal penetration of Roundup herbicides, in response to questions from EU regulators. Studies responsive to this request were needed to sharpen estimates of worker-exposure risk, especially in the case of formulated Roundup products containing POEA.

588. To address evolving worker-risk concerns among European regulators, Monsanto commissioned a dermal penetration study in rats. It was conducted by a Denmark contract laboratory, TNO. The results of the rat skin penetration study using a Roundup formulation suggested that 5% to 10% of the glyphosate in this Roundup formulation was dermally absorbed,

in contrast to the standard, 3% estimate relied on by EU and U.S. regulators.

589. Monsanto was worried about the potential that the study would “blow Roundup risk evaluations. (getting a much higher dermal penetration than we’ve ever seen before.” (MONGLY03738295) Therefore, they decided to stop any further work with TNO to generate new rat skin dermal penetration data.

590. To my knowledge, the results of the TNO rat skin penetration study showing 5% to 10% dermal penetration were not submitted by Monsanto to the U.S. EPA, as required under the Section 6(a)(2) “adverse effects” reporting requirement in FIFRA.

591. Nor, to my knowledge and based on the records I have reviewed, was the TNO data shared with any other regulatory agency. If the company did transmit a 6(a)(2) submission to EPA with these data, or provide it to other regulators, Monsanto will surely correct the record in deposition and/or at trial.

592. In addition, Monsanto continued for years to argue in all regulatory submissions, peer-reviewed journal publications (some with an accurate listing of authorship, others ghost-written), and in the media that the 3% estimate of glyphosate-dermal penetration in the case of Roundup products formulated with POEA *overstated* actual penetration and risks, even after the company knew that the opposite was almost certainly the case.

593. Accordingly, for many years, Monsanto consciously perpetuated possibly unsafe uses of RangerPro, Roundup ProConcentrate, and other Roundup products in three ways.

594. First, the company knowingly mislead regulators, and users of RangerPro and Roundup ProConcentrate, including Dewayne Johnson, by failing to disclose to regulators that an erroneously low dermal absorption estimate was included in worker-safety risk assessments.

595. Second, Monsanto knew that people applying Roundup products with backpack

sprayers were subject to much higher dermal exposure levels when the person applying the herbicide walks roughly in the same direction as the wind, or when the herbicide is applied in an upward direction (e.g., when tall vegetation, like trees).

596. In light of such common knowledge about the risk of applicator exposure to spray drift when various Roundup brands are applied by hand held or backpack sprayers, Monsanto employees in Europe had considered the addition of a new label provision requiring applicators, on windy days, to walk perpendicular to the direction of the wind. To my knowledge, this simple, low-cost, worker-risk-mitigation measure has still not been included on Roundup product labels in Europe or the U.S.

597. Third, Monsanto refused to add to its RangerPro and Roundup ProConcentrate labels the more restrictive and cautious worker-safety provisions that EPA called for in the 1986 glyphosate Registration Standard, nor has the company added similar provisions designed to bring about a comparable degree of risk reduction.

598. The failure of Monsanto to assist regulators in producing progressively more accurate, real world worker-safety risk assessments is a clear and consequential breach of the company's pledge to adhere to the best science available in the manufacture and marketing of its herbicides.

599. In addition, Monsanto's failure to propose, and/or agree to incrementally more restrictive worker-safety provisions, especially in known, high-exposure application scenarios, enabled and perpetuated unsafe Roundup application episodes, including many of the legal applications made by Dewayne Johnson in 2012-2014.

600. For these reasons, I conclude that Monsanto's egregious lack of concern for product stewardship and the safety of certain Roundup users substantially increased Mr.