Exhibit C-58: List of Speakers and written material from public testimony at hearing

Written Testimony: 08/26/2022

Exhibits 1 - 10

Name (print)	Address	Pages	Email/Phone
1. Casey Young	22146 Grip Road Sedro Woolley WA 98284	1	kcyart@gmail.com 360.399.1434
2. Laura Campbell	22146 Grip Road Sedro Woolley, WA 98284	1	kcyart@gmail.com 360.399.1434
3. Ellen Martin	4929 Ida Drive Sedro Woolley, WA 98284	1	ellenkmartin39@gmail.com 360.840.4390
4. E. Eric Knudsen	13033 Sunrise Drive Mount Vernon, WA 98273	1	eericknudsen@gmail.com
5. Leslie Mitchell	4929 Ida Drive Sedro Woolley, WA 98284	1	ldmitch2015@gmail.com 540.514.0037
6. Don & Linda Jonasson	17543 Peterson Road Burlington, WA 98233	1	jonasson.farm@frontier.com 360.757.6281
7. Catherine Fitzgerald	19328 Prairie Road Sedro Woolley, WA 98284	2	cajonasson@yahoo.com 360.904.6721
8. Dennis Whitcomb	19117 Prairie Road Burlington, WA 98233	1	dennis.whitcomb@www.edu 360.399.1434
9. Richard Prange	20183 Prairie Road Sedro Woolley 98284	1	360.708.1359
10. Paula Shafransky	22461 Prairie Road Sedro Woolley, WA 98284	2	pshafransky@gmail.com 360.856.1637

(1)

Public Hearing Testimony Miles Mine - Grip Rd. 8/26/22

Concerns –

Environmental:

A. We are threatened with fines if we don't regularly inspect our septic systems to protect the salmon, yet an open pit industrial gravel mine is allowed within 200-300' from the Samish River, with access roads crossing several Salmon baring streams with a parade of polluting gravel trucks up to 30 an hour operating for 25 years – What Hippocrasy!
B. Noise pollution - Gravel trucks up to 30 an hour for 25 years!
C. Property value decline!
D. Quality of Life affected!
E. Ground water – Wells - Wildlife negatively affected!
F. Safety Concerns – Prairie and Grip Roads have no shoulders and tight corners. This poses risk to commuters, children and pets!

The Rural Character of Grip and Prairie communities will be greatly damaged!

Casey Young
22146 Grip Rd.
Sedro-Woolley, Wa.

(2)

July 11, 2022

Public Hearing on Grip Rd. Gravel Mine -

Having purchased this 9-Acre parcel in 1983 with the intent of keeping it a sanctuary for wildlife, we are advocates for a healthy eco-system.
Noise pollution, Water pollution and Exploitation are not acceptable in our neighborhood!

This Gravel Mine will detract from the quality of Life we share with our neighbors and devastate Land & Property Values.
A greater impact statement should be addressed!

Laura Campbell
Casey Young
Grip Road Residents
22146 Grip Rd.

(3)

Hello Hearing Examiner,

My name is Ellen Martin. I live on Ida Dr about 1.5 miles from the mine site.

I would like to express my concerns regarding the gravel mine proposal. I do not believe the application has appropriately addressed environmental concerns.

I believe the intensity classification for this proposal of medium is inaccurate according to the Appendix 8C of WA DOE Publication No. 05-06-008. Strip mining is high intensity and should require a 300 foot buffer to the wetlands instead of the 200 ft requested.

The environmental review is not adequate. The water pollution, from road run-off and erosion into Swede Creek, provides risks to fish and other aquatic animals including the endangered Oregon spotted frog. The salmon bearing streams, including Swede creek and Samish river, will be subject to much additional contamination from the haul truck tires. The toxicant, called 6PPD-quinone, leaches out of the particles that tires shed onto pavement. Even small doses kill coho salmon in the lab. Violating Special Use Permit (SCC 14.16.900 paragraph C)

Additionally, it is estimated that over 700 metric tons of carbon dioxide equivalent per year will be generated by the mining operation while also removing 68 acres of forest that would help absorb the emissions. 860 acres of forest would need to be protected in order to absorb the C02 emmited. Violating Special Use Permit paragraph G

I believe the rural character, landscape and lifestyle of the area will be affected by this proposal – the peace and quiet, and impacts to fish and wildlife of the Samish Valley, substandard buffers on the river and wetlands, the loss of wildlife habitat and wildlife migration corridors. Violating Special Use Permit, paragraph I

I think there should be a

firm limit on the hours of operation

number of trucks allowed

a designated haul route

all roads on the route should be fixed by Miles to meet county standards

a plan to fully protect fish and wildlife habitat along Miles' two-mile long internal haul road, including

where it crosses unstable slopes in Swede Creek gorge

a plan to address and mitigate the climate impacts, potentially permanently protecting a portion of the applicants adjacent forest land

a clear monitoring plan and enforcement

Thank you for your time and consideration

Ellen Martin
4929 Ida Dr
Sedro Wolley, WA
98284

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Mona Kellogg

From: Eric Knudsen <eericknudsen@gmail.com>
Sent: Thursday, August 25, 2022 1:29 PM
To: PDS comments; Planning & Development Services
Cc: Mona Kellogg; Russell O. Walker
Subject: Comments on Grip Rd Gravel Mine

Dear Planning Commissioners
I am writing in opposition to the proposed gravel mine on Grip Rd, being considered under Special Use Permit application #PL16-0097 and Forest Practice Conversion application #PL16-0098 proposed by Concrete NWest and Miles Sand and Gravel.

It is abundantly clear that "The proposed use will cause potential adverse effects on the general public health, safety, and welfare" and that "The proposed use will not maintain the character, landscape and lifestyle of the rural area". I believe the mine should not be permitted because of how it will irreversibly eliminate forest land and the concomitant wildlife and carbon sequestration values. Furthermore, the extreme truck traffic and noise will be highly disruptive to the rural area. I'm also deeply concerned about further harm to the Samish River aquatic ecosystem, which is already in a very stressed state. Lastly, why should the county and state taxpayers pay for the extreme damage caused to public roads?

If the mine is approved, then every one of these issues should be fully mitigated by

- reducing the mine's footprint
- replacing or rebuilding habitat and carbon production equivalently,
- generous buffers along the Samish River,
- reducing the number of truck trips allowed, and
- Charging the the mine operators fees for road maintenance.

Thank you for considering these comments.

Sincerely,

E. Eric Knudsen, Ph.D. (Wildlife and Fisheries Science)
13033 Sunrise Dr.
Mount Vernon, WA 98273

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August 21, 2022

Mine Comments

Greetings, my name is Leslie Mitchell and I live just east of the site of the proposed industrial-scale Grip Road Mine (PL #16-0098). I want to thank all the people that have shown up here today & the time & effort that has been put into comments given today.

I moved to this area about two years ago and have greatly enjoyed the peaceful farming community that will be impacted by the mine. The seasons here are marked by the return of eagles and salmon in the late summer and fall and by nourishing rains and snows in the winter and spring. There is a quiet, and slow pace of life here that is cherished by longtime and new residents alike. This way of life and the surrounding environment will be impacted significantly by the development of the proposed Grip Road Mine, and I would like to outline these impacts in relation to the requirements of a Skagit County Special Use Permit (SCC 14.16.900):

Regarding letter L – "The proposed use will maintain the character, landscape and lifestyle of the rural area". This is an agricultural area that experiences low levels of traffic. Development of a 51-acre, 60-foot deep, open pit mine just 200 feet from the Samish River does not maintain the quiet and peaceful character, landscape, and lifestyle of the rural area. Grip & Prairie road is the route of school buses, farm equipment, bicyclists, walkers, runners, and daily commuters. Prairie and Grip Roads are narrow two-lane roads with little to no shoulders. These roads also flood on an annual basis. The addition of gravel truck and trailer traffic to these country roads, with the potential of 60 truck trips per hour, does not meet the requirement to maintain the character and lifestyle of the rural area.

Regarding letter E – "the proposed use will not cause potential adverse effects on the general public health, safety, and welfare." – Prairie and Grip Roads are two lane rural byways not intended for intense industrial use. There are numerous blind and 90 degree turns on these roads. The current proposal allows for more than 5,800 fully loaded truck and trailer combos per year to travel Grip Road and navigate a 90-degree uphill turn onto Prairie Road. This is a template for disaster.

In order to maintain at least some amount of the character, landscape, and lifestyle of this rural area and NOT cause potential adverse effects on the general public health, safety and welfare as required by County regulations, I submit the following requests: – if indeed the SUP is approved

1. Set firmer limits on hours of operation and daily numbers of gravel trucks.
2. Restrict trucks to a designated haul route on public roads that have been adequately improved for safety.
3. Protect the Samish River with at least a 300-foot buffer as required by County Code for industrial sized projects like the Grip Road Mine.
4. Fully protect fish and wildlife habitat along the two-mile long internal haul road, especially including where it crosses unstable slopes in Swede Creek Gorge, and ~~mostly importantly~~;
5. Implement a monitoring and enforcement plan with periodic permit review to ensure compliance with permit requirements.

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5. Lastly, someone mentioned that dust will be mitigated by with water - I wonder where that large amount of water will be taken from and what impacts that will have on ground or river water. And most importantly;

Thank you for your consideration of my comments,

Sincerely,

Leslie Mitchell

4929 Ida Drive
Sedro Woolley, WA 98284
LDMITCH2015@GMAIL.COM

(6)

My wife and I grew up on Prairie Rd since the 1940's and still have property that backs up to the mine in addition to being impacted by the increased traffic.

The Grip Road Mine proposal will generate intrusions on privacy of surrounding areas (SCC 14.16.900, D) and 100% will not maintain the character, landscape and lifestyle of the rural area (SCC 14.16.900, I) as a result of the hauling from the mine.

The Grip Road Mine proposal is also in conflict with the health and safety of our community (SCC 14.16.900, G) as there 100% will be fatalities, it is not a question of if but when. Prairie Road DOES NOT meet the Special Use Permit criteria as it WILL cause adverse effects on the general public health, safety and welfare (SCC 14.16.900, E). Have you driven the road?

Sincerely,

Don Jonasson

Don & Linda Jonasson

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My name is Catherine Jonasson Fitzgerald and my family resides at 19328 Prairie Rd which is the West end of Prairie Rd and lies between the south and north 90 degree corners. We have lived at this location for 7 years but the property has been in our family since the 1940's so I have a lifetime of memories of calls from the sheriff that someone has missed the corner. Though I am concerned about the environment impacts such as increased soot, dust, etc, my primary concerns are noise and safety.

The Grip Road Mine proposal will cause undue noise for surrounding dwellings (SCC 14.16.900, C) and will NOT maintain the character, landscape and lifestyle of the rural area (SCC 14.16.900, I) as a result of the hauling from the mine. Our property and home borders the road through both 90 corners and the straightaway which will be directly impacted by increased noise from trucks using compression brakes. In addition, every truck/trailer combo that crosses the Friday Creek bridge adds undue noise due to the bump/bridge joints on each side of the bridge.

The Grip Road Mine proposal is also in conflict with the health and safety of our community (SCC 14.16.900, G). My utmost concern is the safety of our community members along this narrow road which is also shared with bicyclist, pedestrians and farm equipment. I can no longer count how many times someone has missed the south curve (eastbound or westbound) and driven through our fence into our yard or landed in our neighbors yard. Or how many times someone has crossed over the center line in a sedan or pickup, clipped the other vehicles bumper and sent both vehicles into a spin, ultimately crashing. Or the all too frequent screeching tires and honking horns as someone with a travel trailer, dump trailer, logging truck, semi-truck, etc comes around the corner crossing the center line and the oncoming traffic has to react by slamming on their brakes or swerving. Just to be in our yard/garden, we jeopardize our lives and have to be on the constant lookout (listening and watching) and I am terrified at the prospect of adding additional large truck/trailer combos. Prairie Rd is hazardous in its current condition but the addition of more semis will ultimately turn the situation deadly.

Please, I urge you, come drive the roads before you make your decision, it is the only way to truly understand the impacts. Think about yourself as the gravel truck driver and how little wiggle room you have in your lane as you navigate the

sharp corners and non-existent shoulder. Think about once you hit the straight stretch and are going 50mph only to hit the brakes as you are slowed to a screeching halt behind a bicyclist or tractor with no opportunity to pass. Then the cars lined up behind you become impatient and make the rash decision to keep swerving into the oncoming lane to see around your gravel truck no realizing you are held up by a tractor/bicycle. The car guns it to get around you, only to realize they miscalculated and are now on a blind corner and have to choose between head on with an oncoming semi or running the tractor off the road. We have had this experience as we move our tractor between fields, there is no room for error and lives are more important than the revenue from the gravel pit. Prairie Road DOES NOT meet the Special Use Permit criteria as it WILL cause adverse effects on the general public health, safety and welfare (SCC 14.16.900, E).

Sincerely,

Catherine Fitzgerald

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8/26/2022

Thank you for this time allowing me to speak today. I live on a route that trucks from the proposed mine would regularly take, on the corner of Prairie Road and Highway 99. As a community member I have serious concerns about the safety of this proposed operation. I also have serious concerns about the Mine Developer's application documents, in particular their Traffic Impact Analysis, their Geo-Tech report, and their Critical Areas Evaluations.

Let me start with those documents. To make a long story short, the local community has banded together and employed technical experts to review those documents – and, it turns out, those documents have a wide range of clear inaccuracies as well as many important omissions. Do not take my word for this. Instead, please see the documents submitted by Ross Tilghman, Dan McSchane, and Matt Mahaffie. Those documents bring out the Mine Developer's errors and omissions in scientific and technical detail.

Now to road safety. I proudly raised my daughter in this community. She took the bus to Burlington Edison High School from 2016 to 2020. In those years, she told me several times about near-accidents between school buses and rock trucks. She explained a particularly harrowing one of those near misses in her comments to the county early on, shortly after it happened. Here is what she wrote:

> I am a student at Burlington Edison High. Every day I take the bus to and from school. On the way home, the bus goes down Prairie Road, along the section where it intersects with Grip Road. Last week, the bus was on that curve on Prairie, near the Grip intersection. A gravel truck was coming down the road in the opposite direction. This truck was a bit over the line, into our lane, and it nearly hit the school bus. The bus driver had to swerve and go as far out on to the shoulder as she could. If the gravel truck had been even a little bit further over the line, the bus driver would have had nowhere to go, and the bus would have been hit. I am concerned about the safety of children on school buses, if the gravel pit permit is accepted.

That comment was received and recorded by the county in May of 2017, five years ago, and has been publicly available ever since. Nonetheless, and amazingly, no mention of school buses appears in the traffic analysis on offer from the Mine developer. This glaring omission, like many others, is outlined in the technical letters submitted by the scientific experts representing the community.

I believe that those letters show that the Mine developer has not met the criteria for a special use permit under SCC 14.16.900, especially sections E and G. Those sections require that the proposed mine not adversely affect public safety. But it will most certainly will do that. I encourage you to deny the mining special use permit on that account.

Again, thanks for allowing me to speak here today.

Dennis Whitcomb
19117 Prairie Rd.
Burlington WA 98233

(9)

From: Richard
Sent: Monday, August 22, 2022 3:41 PM
To: [redacted]
Subject:

Sent from Mail for Windows

In making your decision on this matter you have, I would assume, looked at the traffic studies, ecological impact studies, water quality impact studies, sound level impact studies, and all other relevant (and required studies) that are done prior to making your determination of feasibility of this project. As opposed to you I have done nor read any of those studies. Maybe I should have. What I have done is live along Prairie Rd since the mid 1970's. I have watched the area grow and the level of traffic and traffic noise increase on a yearly basis. Here is where I come down on this project.

In all the 50 years that my wife and I have lived along Prairie Rd., other than a sporadic chip seal, ditch clean out, or repainting of the road stripes nothing....absolutely nothing has been done to make the road wider. I did see this past year that a minimal bank cutout was done at the intersection of Prairie and Grip Roads ~~was done,~~ but if that was done to actually impact the safety of that intersection, it has fallen woefully short. A serious widening of those corners at that intersection would be required. I did see this past year guard rails installed at the west end of Prairie. Since those guard rails were installed prior to any widening of the road, they have created a safety hazard instead of reducing it. There is no where to go.

Road safety is my key issue. Prairie Rd. needs to be widened to have any chance of avoiding really serious accidents if this operation is allowed to start. Money, more money will need to be spent to insure this project doesn't create multiple serious accidents. The company proposing this project has a very long time to recoup the money spent now and still have a big profit. Do it right.

Until you have personally gone out to Prairie Rd. and set up a loaded gravel truck to drive west while you drive east though the guard railed section you haven't done the whole job. Drive it under the conditions that we will have to drive it. You'll get a totally different perspective on this project and the safety needs required.

RICHARD PRANGE
20183 PRAIRIE RD.
SEDRO WOOLLEY

(10)

July 11, 2022

Kevin Cricchio, Senior Planner

Skagit County Planning and Development Services

1800 Continental Place

Mount Vernon, WA 98273

RE: Mitigated Determination of Nonsignificance (MDNS) for proposed Grip Road Gravel Mine

File #'s PL16-0097 & PL16-0098

Dear Mr. Cricchio:

I am writing to express my concerns again about the proposed gravel mine located near Grip Road and the Samish River. This is in regard to Miles Sand and Gravel Corporation's application for a Mining Special Use Permit, Files PL16-0097 & PL16-0098. I am commenting on the new Mitigated Determination of Nonsignificance (MDNS) that the County issued on February 24, 2022. I sent comments in last year, on the MDNS dated April 15, 2021, but then the County withdrew that MDNS (on May 23, 2021). I understand that the comments I submitted last year won't be part of the formal record for the new MDNS. Unfortunately, it appears that very little has really changed regarding this proposed industrial scale mine. So, I am attaching my original letter dated April 25th, 2021. Please make these comments part of the record for this new MDNS. I am very disappointed that the County and

As far as I can tell, Miles Sand and Gravel still have not addressed many of the community's concerns. I ask that the County withdraw the current MDNS and issue a Determination of Significance (DS), requiring Miles to submit a full Environmental Impact Statement (EIS). The EIS must cover the impacts to the natural environment from the mine itself, the associated private haul road, as well as all off-site and cumulative impacts. This includes impacts on traffic safety and county roads for ALL potential haul routes over the entire life of the mine.

I live on Prairie Road and commute on the road that these gravel trucks will be traveling on. Since the guard rail went up along Prairie Road from F and S to Old Highway 99 this portion of the road has become significantly more narrow. There still needs to be a more thorough traffic impact analysis to address the issue of public safety when these

gravel trucks are moving through this area as well as the turn off from Grip Road onto Prairie Road.

I do understand that some new mitigation measures have been proposed in this MDNS, but they are not sufficient. For instance, conditions were proposed that address hours of operation (Mitigation Measure #2) and numbers of daily truck trips (Mitigation Measure #13.vii.). In both of these cases, vague "extended hour" scenarios are allowed without clarity about how or when this would actually happen, what additional conditions "may" be imposed, and there is no assurance that the public would be consulted or informed about these extended hours. Especially regarding truck numbers, the wording is unclear, and the limits are far too high.

Similarly, the County has finally recognized that the private 2.2 mile long haul road is part of the project, but no mitigation is proposed to restore and protect the 36 wetlands and 21 seasonal streams that are within 300 feet of the haul road (this haul road was massively rebuilt in 2018, without a new permit, for mining purposes). In addition, not enough measures have been proposed to ensure that the haul road will not cause slope failure in the Swede Creek gorge, threatening this fish bearing stream.

The County is supposedly charged with having the welfare of its citizens in mind when considering proposals such as this. We know and the County knows that this mine does not belong in our rural neighborhood. It will degrade the environment we cherish and have fought to protect. Please put the welfare of the residents that live here above the bottom line for Miles business interests.

Thank you for the opportunity to comment.

Sincerely,

Paula Shafransky

22461 Prairie Road

Sedro Woolley, WA 98284

Written Testimony: 08/26/2022

Exhibits 11-22

Name (print)	Address	Pages	Email/Phone
11. Renee Kenaday	5319 Cedar Ridge Place Sedro Woolley, WA 98284	2	rkenady44@gmail.com 360.661.1272
12. Robert Walsh	21710 Prairie Road Sedro Woolley, Wa 98284	2	360.708.7736
13. Tristan Shaffer	22452 Prairie Road Sedro Woolley, WA 98284	2	tristanshaffer@gmail.com 206.788.5109
14. Kimberly Bonnet	21710 Prairie Road Sedro Woolley WA 98284	1	kibonnet@yahoo.com 307.321.9888
15. Stephen Kenady	5319 Cedar Ridge Place Sedro Woolley, WA 98284	1	smkenady@gmail.com 360.661.1272
16. Rachel Reim-Ledbetter	23262 Meadow View Lane Sedro Woolley, WA 98284	1	kreim@earthlink.net 360.856.4676
17. Monty McIntyre	222473 Grip Road Sedro Woolley, WA 98284	3	360.927.8771
18. Monty McIntyre	22473 Grip Road Sedro Woolley, WA 98284	1	360.927.8771
19. Monty McIntyre	22473 Grip Road Sedro Woolley, WA 98284	5	360.927.8771
20. Monty McIntyre	22473 Grip Road Sedro Woolley, WA 98284	1	360.927.8771
21. Monty McIntyre	22473 Grip Road Sedro Woolley, WA 98284	1	360.927.8771
22. Monty McIntyre	22473 Grip Road Sedro Woolley, WA 98284	22	360.927.8771

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As a 29 year resident on Prairie Road I am here to express my grave concerns about the proposed Grip Road mine project. Because this mine is in my neighborhood, I have been following these developments for 6 years.

I believe the criteria for a Special Use permit are consistently being ignored. In my opinion this proposal does not meet the criteria for a Special use permit – a few of which are listed below:

#1 (C)The proposed use will not create undue noise, odor, heat, vibration, air and water pollution impacts on surrounding, existing, or potential dwelling units.

There is going to be air pollution from the diesel exhaust, noise from compression brakes as well as from the machinery at the pit, vibration from so many trucks on the road, and water pollution from road run-off and erosion in Swede Creek. The County's own code requires a 300 foot buffer to protect the Samish River.

#2 (E) The proposed use will not cause potential adverse effects on the general public health, safety, and welfare."

This issue is paramount – the safety on the roads will be greatly affected. All you have to do is drive the haul route to see for yourself the impact there will be, especially at the intersection of Grip and Prairie Road as well as along the portion of Prairie Road that has a guard rail south side. There is no wiggle room, no shoulder if a big truck is over the center line.

#3 (I) The proposed use will maintain the character, landscape and lifestyle of the rural area.

> I have always had significant concerns about the assessment and application documents that supposedly addressed the environmental protections for wild life and fish as well as our rural landscape. These concerns include substandard buffers on the river and wetlands, disruption to wildlife corridors, and specifically the intrusion into the peace and quiet of our community.

How can these criteria be so blatantly ignored?

Miles' application for this mine was denied in 2018 due to incomplete application materials and factual inaccuracies. In reviewing the current documents the same environmental concerns I had in 2018 still don't appear to being addressed or taken seriously.

My husband and I moved to this area to enjoy a rural setting with quiet living, clean air, and wild life viewing in our back yard. This mine will drastically change all that. I don't believe the county is doing its due diligence in the oversight of this project, and is not following its own critical area ordinance. This whole project seems to be about ignoring public comments and

legitimate concerns in order to facilitate Miles' business interests at the expense of the environment and public safety issues. We know this mine does not belong in our neighborhood and so does the county.

Because of limited time to speak I am attaching some comments about how the proposed mitigation will not be effective in reducing the mine's impact:

No way to enforce restrictions on hours of operation and daily truck traffic, no other improvements required for other roads or intersections, and no requirement for a fixed haul route.

If there is to be a special permit issued, there needs to be firmer limits on hours of operation and daily numbers of gravel trucks, Miles needs to pay for any repairs or upgrades to the roads involved (not the tax payers), restrict trucks to a designated haul route that has been adequately improved, protect the Samish River with a 300 foot buffer as required by COUNTY CODE, fully protect fish and wildlife along the 2 mile internal haul road, and most importantly, implement a monitoring and enforcement plan to ensure compliance with permit requirements. It doesn't take much digging to discover how Miles' record of ignoring special permit regulations is abysmal.

Paula Shafransky

22461 Prairie Road

Sedro Woolley, WA 98284

Gravel Mine Hearing 8/26/22 (12)

My name is —

I am going to speak about two things today: Safety and Quality of Life regarding the proposed gravel mine.

Since we began this fight 6 years ago, the response to us from MSG was dismissive, patronizing and arrogant. It was clear that what we felt about how their operation would affect us didn't and doesn't matter.

This is not all farm land and is not an industrial area. Most of us, hundreds of us if not more, live on 5 acre parcels that we bought, cleared and built our home on. Ours is our dream home and we live several 5 acre parcel widths east from this mine. We are retired and do not want to move or start over. not sporatic!

We all drive these roads daily to work and to take care of our personal needs. Our children drive these roads. Our grandchildren drive these roads. Our elderly drive these roads. Buses full of children are driven on these roads.

These roads are narrow, curvy and dangerous in many parts where the trucks will be driving. Even on the straight stretches there is danger from the gravel trucks. On a recent trip we took, a gravel truck passed us and a large rock hit our windshield making a big crack. This is bound to happen on these roads.

A few years ago, I videotaped a Miles Sand & Gravel truck as I was behind him on Bow Hill going up the hill from Prairie to the freeway. I it was going about ~~5 to 7~~ 10 miles an hour as I miles an hour. I've also had them pass by me as they were coming rapidly down that hill. That hill has now been improved, but the hill from Prairie to Grip is treacherous. 1/3 mile long hill @ 10 mph = 2 min. 30 trucks per hour is constant. Emergency Vehicles

The hill on Grip Rd. going from Prairie to the gravel mine is long, steep and curvy with very little to no shoulder and will be clogged with these trucks going up. Coming down the hill will be dangerous. The pollution from their diesel exhaust will be substantial. I also strongly oppose our tax dollars to pay for road improvements to allow for this operation

The road east of the mine has not been addressed, but there are severe curves that school buses cannot even make without crossing the line and causing oncoming traffic to stop to let them by. I don't mind this because I want to keep our kids safe, it doesn't happen often and it is necessary.

I also want to speak to the language regarding extenuating circumstances affecting Miles Sand and Gravel operations. If the county gives them the latitude to decide how many trucks a day can travel the road and how many hours in a day they can do it, it's pretty clear to me that MSG will abuse that because of their non-caring, arrogant attitude.

Not only will the traffic be an issue but sound pollution is another factor. Big trucks make loud beeping noises when backing up. The engines are loud. Digging the gravel will be noisy. To allow them the opportunity to choose to do this 24/7 is just not acceptable. Any of this is not acceptable to me. People will hear this regardless of how many hours they operate. Who is going to monitor this?

If they process the gravel on this property, which I am not sure about and I'm mentioning because I haven't noticed language regarding that in some time, there is danger of depleting our water table which will could affect our wells which we depend on for water. It could also contaminate them.

Miles Sand and Gravel, owned by a large corporation Lisa, Inc., has much money at their disposal. We have continually asked for an Environmental Impact Statement done by a neutral party. I'm sure they can afford it and even though I wonder why they won't do it, it seems pretty clear. There are just too many ways that this gravel mine will negatively impact this area.

I plead with you, the county, to think of this as the community that it is. As property owners who pay a lot of taxes, I would hope that the county will help protect the value, sanctity and serenity of the homes and property on which we live. That is why we moved here. I will let others speak to the many other mitigating concerns. Thank you for your time,

Renee Kenady –
5319 Cedar Ridge Place, Sedro Woolley, WA 98284

(13)

August 26, 2022

Robert Walsh
21710 Prairie Road
Sedro Woolley, WA 98284

RE: Miles Sand & Gravel (Concrete Nor'West
Please add the attached letter to the records of PL16-0097,
PL16-0098 & Appeal PL 21-0142

Hello,

My name is Robert Walsh, I have lived on Prairie Road since 1991 and I am a professional truck driver. My property shares a border with the Gravel Mine parcels. I have 40 years of truck driving experience and 16 years working in the mining industry. I drove Dump Trucks and trailers, operated heavy equipment such as excavators, dozers and loaders. I know first hand how loud equipment noise is combined with the noise of rocks hitting metal truck boxes. Noise is a documented adverse impact and must be mitigated to comply with Special Use Permit criteria. These combined noises can carry a long distance and exceed allowable limits. Regardless of the MRO, when I worked in the Mines in Skagit County there were strict regulations put on hours for mining, which included excavation and all transporting of materials, mitigation necessary to be compatible and to protect the public per County regulations.(SPU criteria)

Even accumulative noise that does not exceed allowable limits can have adverse impacts when we are exposed to it daily and I am very familiar with the level of noise that Miles Sand & Gravel will be creating during their daily operating. This will be in our environment that has had no such level of these noise impacts before. There will be a great deal of on and offsite noise created not only by the mining operations but offsite truck transportation. Many of my community members live just feet from the road which these heavy trucks will be using and they will definitely shake and be extremely loud. My Mom lived on Prairie Road for years. Just an occasional large truck going by would rattle her home and we could hear them coming long before they went by. Level of noise measured is supposed to be at the owner's property line. The noise study did not measure the levels at our shared property line but instead measured the noise levels thousands of feet across our property at Prairie Road.

As far as traffic safety these high numbers of trucks, with or without trailers, will greatly increase the risk of auto accidents. I drive these roads out here daily and they are narrow with many sharp corners, blind intersections and with my years of commercial driving experience I know these trucks and trailers will not be able to stay in their lanes. Then add the fact there are no shoulders and the 'sway' on the road, there will be serious wrecks. I am counting on the County to protect my rights to have access to safe roads and only allow transportation when and IF it can be done safely. The occasional truck or farm equipment that we have using our roads right now doesn't come close to presenting the safety hazards multiple Dump Trucks and Trailers will burden us with. Even professional truck drivers cannot make up for the fact these rural roads DO NOT meet County codes for the SUP and are unsafe for this high Intensity use. Due to the fact these roads are chip sealed they will require a lot more repairs from the heavy truck traffic. I am also concerned about the negative impacts to my property value, environment and my quality of rural life. 25 years is not temporary, and this proposal is not compatible with current land uses.

14

Tristan Shaffer
22452 Prairie Road
Sedro-Woolley, WA 98284

Skagit County Planning and Development Services
1800 Continental Place
Mount Vernon, WA 98273

RE:Special Use Permit application #PL16-0097 and Forest Practice Conversion application #PL16-0098

I live on Prairie Road across the Samish river from the Grip Road gravel mine site. As someone new to this area, I am amazed by the amount of birds and wildlife. Encounters with hawks, eagles, and owls are so common they are no longer a conversation at dinner. I didn't know what a nighthawk was until I began hearing their evening calls this summer. Last weekend the doorbell camera captured a video of bats hunting insects on the back porch. So I am concerned about the impacts excavating and transporting 4.2 million cubic yards of material will have on local wildlife and fish.

I think about what the impacts will be on the users of Prairie and Grip roads, especially pedestrians and bicyclists. Prairie has no shoulder or turn outs to speak of. The sharp curves and high speed straight sections that make it so popular with motorcycles make it difficult for large trucks and equipment to navigate without encroaching on the opposite lane or impeding traffic. The first time I drove Prairie road in the dark was this past October. As I was approaching F&S grade from the west, a pickup overtook me at an incredibly high rate of speed. At the time I didn't realize that was the last place to pass for the next four miles.

I think about my neighbors on Prairie that have seasonal farm stands, selling fresh eggs, vegetables, and flowers. Will their customers still feel it's safe to stop? Or will the thought of having to merge back into traffic with heavy trucks and trailers make that seem not worth the risk? What other economic and health impacts will they face from the increased noise, vibration, and diesel emissions? Certainly the rural character and lifestyle they currently enjoy will be affected.

These impacts are hard to measure, and the applicant would argue they aren't required to study them. But I would like to draw attention to studies they have done, in particular the traffic study prepared by DN Traffic Consultants in September of 2020 (exhibit 18) . This analyzed peak hour turning movements and Level of Service at 6 intersections along the two proposed haul routes using data collected between December 17 and December 20th of 2019. It updated and expanded counts gathered in July of 2013, which only looked at the intersections of Grip and Prairie roads, and Prairie and Old Highway 99. Data was analyzed with the ***Syncro 9*** software package to calculate peak level of service, both for existing conditions and existing conditions plus truck traffic generated by the project.

Rural traffic in Washington often has a degree of seasonal variation, due in part to agricultural operations and the growing season. But there is also variation due to school schedules and national holidays, so it is interesting that dates which fall the week before the Christmas holiday were chosen for this study. These are also the shortest days of the year, with only about 8 hours of daylight. Sunset would have occurred around 4:15 PM, meaning the peak hour counts from the study would have occurred during twilight. This may have affected the counts of bicycles and pedestrians, which I believe are included as parameters in the LOS calculation. These 2019 counts were adjusted by adding 1% to the most common turning movements to "reflect 2020 conditions". It is unclear whether that was to reflect traffic conditions on January 1, 2020 or December 17th, 2020.

The dates of the July 2013 study are not available, my understanding is that the original total count data was not available and only peak hour counts were available from the ***Syncro*** data files. July also has a significant national holiday and is a common month for vacations. Certainly schools were on summer break at this time. The 2020 analysis by Kevin Stankiewicz (memo dated April 28, 2020) concludes that there wasn't a clear traffic growth trend. But this conclusion was drawn from peak hour counts, not total volumes. And at only two of the six intersections. An alternate hypothesis would be that peak traffic volumes leading into winter break are similar to peak volumes during summer break.

I was disappointed I could not find a discussion of whether these counts accurately reflect peak volumes the rest of the year. As three of the turning movements are at Level of Service C in the existing condition (the eastbound approach to Prairie, and I5 off ramps at Bow Hill Road) these LOS values should be calculated using the best possible data.

The current traffic study doesn't account for population growth over the working life of the mine, and it doesn't evaluate traffic impacts that would happen during extended operations, such as weekends. It may even underestimate current traffic volumes. This proposal will add 300,000 truck trips to county roads over the next 25 years. A new traffic impact analysis should be performed to address these concerns.

Best Regards,

Tristan Shaffer

15

Miles Sand & Gravel Special Use Permit Hearing on Friday, August 26, 2022, MT. Vernon WA.

I, Kimberly Bonnet am a current resident of Prairie Rd, Sedro Woolley WA and have live on Prairie Road off & on over the past 30+ years.

Due to current road conditions and noise ordinance, I am against this permit being authorize.

- Currently Prairie Rd, Grip Rd and other roads in Skagit County have roads inherently dangerous because of their designs. Sharp turns, shoulder drop-offs, blind curves, and improperly graded roads that already create hazardous driving conditions. Including no shoulders for pedestrians and bike riders.
- Skagit County, WA has a legal responsibility to ensure public health & Safety for safe road conditions. This means that roads must be designed safely and maintained regularly.
- Currently Gravel Trucks with pups will not be able to maneuver Grip Rd, Prairie Road & other roads within Skagit County without crossing into oncoming traffic.
- Heavy vehicles will damage the road surface and if not adequately maintain will create a hazardous road condition.

Skagit County Noise Control Chapter 9.5 says " It is County policy to minimize the exposure of citizens to the harmful nuisance, physiological, and psychological effects of excessive noise and to control the level of noise in a manner which promotes commerce; the use, value, and enjoyment of property; sleep and repose; and the quality of the environment".

Miles Sand & Gravel Mine Special Use Permit will increase the area noise level considerable. Anyone living in these areas can testify to how the noise echoes around and throughout the valley. **Skagit County ordinance 9.50.020 Definitions #** (5) "Public disturbance" means sources of sound when they unreasonably disturb or interfere with the peace, comfort and repose of property owners or possessors. (Ord. O20080001 (part)) . The mining special permit appears to be in direct conflict with this order.

For the record a copy of this letter is being submitted to the Special Use Permit Hearing on Friday, August 26, 2022 to be included in the hearing transcripts.

Submitted by Kimberly Bonnet 21710 Prairie Rd, Sedro Woolley WA, 98284. Aug 26, 2022

16

8/26/22

RE: Miles Sand and Gravel Grip Road Mine Application (PL #16-0098)

To: Skagit County Hearing Examiner

Our home is located less than ¼ of a mile from the proposed mine. Our access to services is limited to Grip Road and over the last twenty years I have become very familiar with the entire route. Past experiences raise two serious concerns. Public safety and water pollution have not been adequately addressed.

Grip Road in particular is dangerous now even without the heavy use the mine will add to the traffic. Over the years I have been forced to stop to the right of the road many times to allow oncoming big rigs to pass. There is only a very narrow shoulder or none at all on Grip Road and it is dangerous to be forced to the right side. In addition to obvious road improvement, mitigation should include:

- Guaranteed maintenance of centerline markings or rumble strips on Grip and Prairie Roads.
- Pull outs on the 90 degree corners of Grip and Prairie Roads.
- Clear identification markings on the front and rear of all mine related vehicles.

Flooding occurs almost annually across Grip Road where Swede Creek meets the Samish River. The shoulder is often eroded and the heavy traffic will exacerbate the problem. The distructive effects of the mine ~~haul road~~ TRUCKS are potentially serious and should be considered. Mitigation should include:

- Guaranteed maintenance of the Grip Road Samish River Bridge and adjacent wetlands and roadway within 1000 feet of the bridge.

If the mine is permitted without addressing these issues those of us who use Grip Road are left with very dangerous situation and few alternatives. Installation of a "dash cam" on our own vehicles will at least record the cause of inevitable accidents and be valuable in litigations that may arise.

The fact that we need to have a such a defensive strategy is in itself a negative effect to our quality of life.

Stephen M. Kenady

5319 Cedar Ridge Place

Sedro Woolley

17

Hello,

My name is Rachel Reim-Ledbetter, and I live with my family at 23262 Meadow View Lane, Sedro-Woolley, WA. I am a manager at People's Bank in Mount Vernon. For over ten years I have driven the entire length- east to west- of Prairie Road at least once a day. We are told in this application that the maximum daily truck traffic from this new mine is limited to an ***average*** of 46 daily trips- not to exceed ***30 trucks per hour*** under extended hours pf operation.

While I understand my observation, experience, and knowledge of this route does not, in the eyes of this hearing, make me an expert, I know average could mean 0 trips one day and 92 the next. Citing averages does not set a standard of mitigation that makes sense. I am clear how 30 trucks per hour would impact my safety and create adverse effects for me and my aging parents at some of the most dangerous intersections in Skagit County. On winter days I follow or meet school busses from both the Burlington and Sedro-Woolley School Districts filled with the many children who live in this populated Samish Valley.

This permit is not transparent or specific. It lacks the kind of good faith effort to address clear expectations and strategies for accountability that do not burden Skagit County Taxpayers over the next 25 years.

I am requesting, sir, that you make the effort to drive these roads as part of a fair process of evaluation. That is the kind of expectation I was raised to believe is the essence of good local government.

It honors the role of county government to keep **those of us who live here** safe on our roads.

Thank you.

(18)

Facts about Russian Bunker Buster depth of destruction
Submitted 8-26-2022
by Monty McIntyre

KAB-1500LG- (F; Pr; OD) -E

The bomb KAB-1500LG-FE is a smart demolition bomb. It is equipped with a cargo warhead high explosive and is designed for constant attack ground targets such as railway and road bridges, buildings, industrial and military ammunition depots or railway terminals. These weapons can also be used to attack ships and cargo ships. The bomb KAB-1500LG-FE striking a detonator or may detonate a delay. Directs the object opponent with a laser illumination system to be installed on airplanes. As a warhead, a special-piercing high-explosive penetrating the capsule that can go deep into the soil to a depth of 20 meters and punch through overlapping structures with thickness up to 3 meters.

- KAB-1500LG-E aircraft controlled bombs equipped with laser air-stabilized homing heads and are designed (depending on warhead) as following below:
- KAB-1500LG-F-E equipped with high explosive warhead to engage stationary ground and sea targets like railway and highway bridges, military and industrial objects, ships, cargo ships, ammunition store ships, railway terminals.

- KAB-1500LG-OD-E equipped with full air explosive wahead to engage stationary ground and sea targets like railway and highway bridges, military and industrial objects, ships, cargo ships, strong points including those camouflaged in terrain.
- KAB-1500LG-Pr-E equipped with penetrating warhead to engage starionary small and extremely strong buried targets like strong concrete objects, command points, ammunition stores.

These weapons are used with front-line aircraft like Su-24M, Su-34, Su-35 etc. equipped with the target laser illumination system as well as other carriers equipped with simple collimator sights for preliminary target designation (using target ground illumination) day and night. Application conditions of mentioned above weapon are determined by aircraft flight operation.

Guided aerial bombs KAB-1500L-Ex is designed for use tactical aircraft and long-range aircraft. The bomb used to destroy high and buried in the ground of critical facilities such as fortifications and warehouses of nuclear weapons, command centers, as well as a variety of small targets.

The bomb KAB-1500L-Ex has a semi-active laser homing system, while providing bombing circular error probable of 7-10 m. Moreover, a significant amount of this indicator was instrumental error of measurement accuracy.

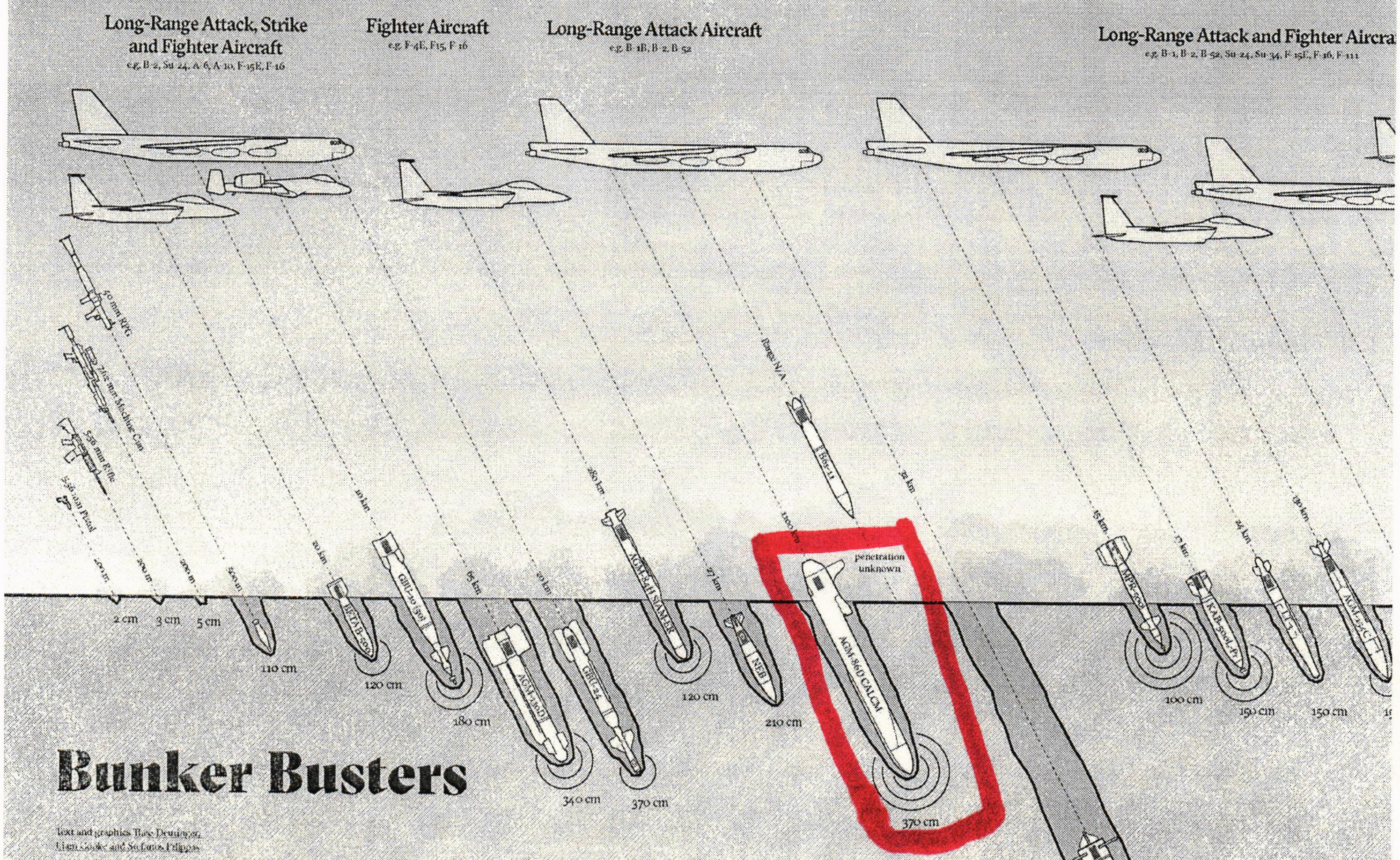
Aerodynamic configuration bombs KAB-1500L-Pr - "tailless". The aft arranged crosswise plumage, behind which there is a biplane rudders that provide maneuverability bomb. Front and rear tail folding, which allows you to place a bomb, not only on the external load, but also in the large aircraft bomb bay.

As a warhead, a special-piercing high-explosive penetrating the capsule that can go deep into the soil to a depth of 20 meters and punching overlap fortifications up to 3 m thick.

Modification of the KAB-1500L-F is equipped with a high-explosive warhead, made on the basis of the standard unguided bombs FAB-1500. With the explosion of the KAB-1500L-F formed crater up to 20 m. Externally similar to the bomb KAB-1500L-Pr.

length	4,28	4,28	4,24
diameter	0,58	0,58	0,58
wingspan	0,85 (retracted)	0,85 (retracted)	0,85 (retracted)
	1,3 (extended)	1,3 (extended)	1,3 (extended)
Drop altitude, km	1 to 8	1 to 8	1 to 10
Aircraft drop speed, km/h	550 to 1100	550 to 1100	550 to 1100
Aiming accuracy, m	4 to 7	4 to 7	4 to 7
Warhead	penetrating	high explosive	full air explosive
Type of blasting device	contact with three	contact with three	direct action contact
	types of delay	types of delay	

19



Bunker Busters

Text and graphics: Ilse Deuninger, Lien Gooke and Stefanos Filippas

Contemporary warriors are retreating more and more from the battlefield and exchanging guns for computers like the one used to write this article. But unlike us, these warriors spend their time in maximum security installations like bunkers. Hitting a bunker is a military jackpot, eliminating drone pilots, cyber warriors and military command all at once. These ever-deeper and more reinforced bunker installations are designed by engineers and architects. Their safety and designs are measured against their biggest threat, the Bunker Busters.

A Bunker Buster is a bomb that is able to delay its explosion after it penetrates layers of earth or concrete with the help of a timer and a propeller. More advanced bombs detect the sound of impact and delay detonation until a specific number of floors in a structure have been penetrated. Although the first earth-penetrating weapons were used in the Second World War by the British army, the first real Bunker Busters didn't enter the scene until the early 1990s. During Operation Desert Storm (1991), there was a sudden need for a deep penetration bomb. Within just 28 days, the laser 'Guided Bomb Unit-28' (GBU-28) was developed. The bomb was nicknamed 'the Saddamizer', referring to its initial target: Saddam Hussein's bunker.

Despite their high amount of collateral damage, Bunker Buster usage is in full swing. Currently, the West is accusing Russia and the Syrian government of dropping the Russian-designed Bunker Buster KAB-1500L-Pr on Aleppo, while the Royal Air Force is using a GBU-50 EPII against Islamic State fighters in Iraq.

And the collateral damage is about to increase. In November 2015, a test of the B61-12, a nuclear Bunker Buster, was conducted by the US army. Being able to penetrate the ground reduces its radioactive fallout risk, thereby lowering the threshold for its actual usage. The Bunker Buster is about to open the back door for the use of nuclear warheads by blurring the sharp line between conventional weapons and weapons of mass destruction.

The withdrawal of the armies from the planet's surface into the air or the ground literally leaves civilians alone in the middle. The fact that cities are the contemporary battlegrounds seems to prove that the only wall that armies hesitate to break through is the human shield.

Soil penetration
of KAB-1500L
is 10-20 metres

UNDUE! Unwarranted or inappropriate or unnecessary

(70)

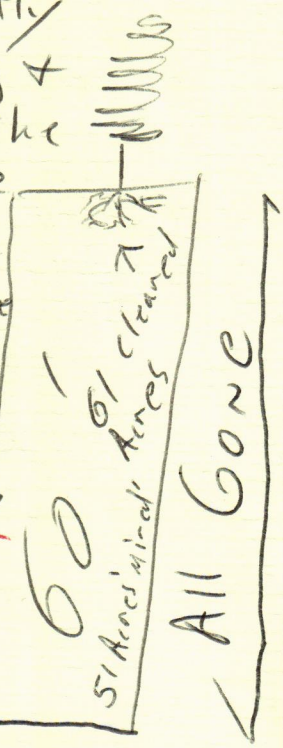
(C)The proposed use will not create undue noise, odor, heat, vibration, air and water pollution impacts on surrounding, existing, or potential dwelling units.

This Special Use Permit must be denied!

it will create Noise impacting neighbors
Heavy equip does that, this is a fact Backup beeping - tailgate slam - Air Brakes, Associated traffic
Air + water poll will occur! Air = diesel particles
Brake dust from trucks
Tire/copper/asbestos
6PPD - How many #lbs from how many tires sloughing over how many miles?
None of this has been Quantified

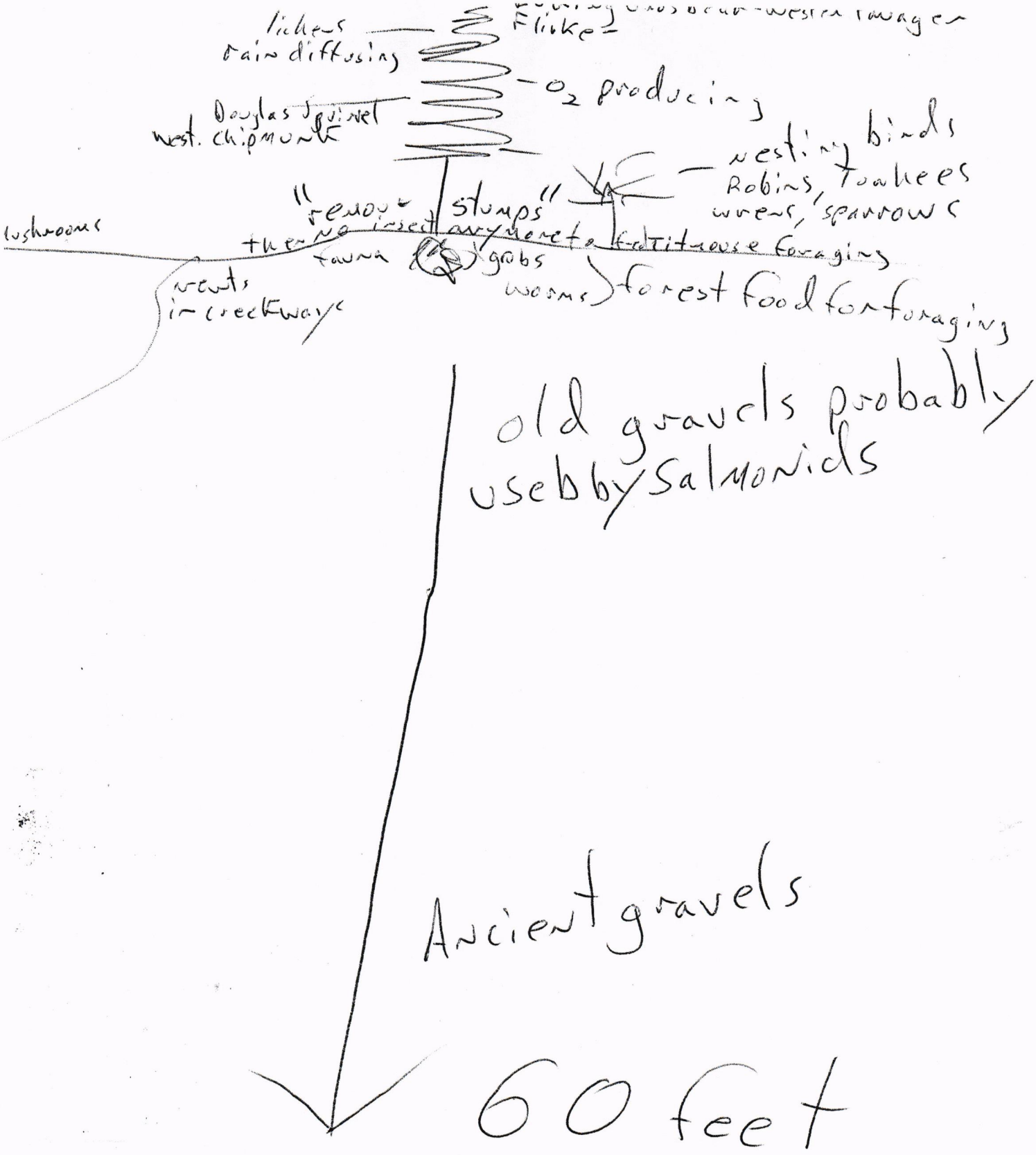
Water: Heavy equip petro leaks. Hyd oil, diesel drips, 6PPD, toxic brake dust, diesel soot

Heat - Absolute removal of CO_2 from treetop down to 60 feet
This is going to create Heat that contributes significantly to Global warming - The actual intense removal of a cooling + oxygen producing forest + all life on the site it supports. The extreme carbon footprint manifested by manufacturing concrete and paving over more of Skagit County will hold heat, with the increasingly hot weather Skagit Co. has been experiencing, concrete slabs hold heat through the night + affect us.



6PPD - Highly toxic to Coho + other Salmonid/aquatic life
The applicant touts May 18 2015 - Aug 20 2015 + April 2017 Critical area opinions from a hired agent. Has WDF been consulted regarding current knowledge + facts about how lethal the quinone analog of 6PPD? Please refer to fact sheets documenting the lethality of this Environmental contaminant. Why has Skagit Co not performed Due Diligence in naming + assessing this chemical in concert with WDF? How many tires, how many miles, how many pounds of 6PPD Quinone will be released. Please be aware that I just heard Kevin Crithio say on "PowerPoint" that up to 720 trips a day may occur! Please limit the number of trips to 25 per day if you intend to issue the SUP for this intense project. The request by Miles is obviously significant, and involves intense land use. Please refuse that and

See Back Page detail



All of the above will be removed if this approved. Complete destruction by absolute 280,000 Removal

(E) The proposed use will not cause potential adverse effects on the general public health, safety, and welfare." — defined as: health, happiness, & fortune

yes it will. People will be subjected to hazardous conditions while driving and several may die as a result of this over a twenty five year term. The .7 mile guard rail, at the 2nd 90° on Prairie Rd, has eliminated any possible escape route for bicycle riders who will encounter Miles trucks transiting Prairie Rd. Spilled gravel & gritty dust from Miles Trucks will cause both bicyclists & motorcycle riders to suffer visibility problems as this dust will be in their eyes. How often will Skagit County sweep this away? Longer, hotter, drier Summer months will exascerbate this problem, that is an adverse effect on Public health, safety & welfare.

Adverse effects include lowered property values for the residents living in close proximity to the actual site as well as along all haul Roads. County Roads used for hauling must be identified & commited to by Miles. My concerns as someone past full Retirement age is that if this project is approved, and my natural health suffers, will i be able to sell out and find another place to retire?

Adverse effects forced upon residents include years of frustration, anger, legal bills, time lost from work, ~~time lost from~~ feeling insecure in their home, and gas used going to public hearings.

Discounting legitimate concerns as "perceived impacts" as Kevin Curtis has just proffered, is somewhat insulting to those seated at this hearing. Facts are scientific findings and must be included. Many impacts are probable & will become factual, at that point they will be perceived through the senses i.e. sight-smell-hearing-touch, etc.

(h) The proposed use will be supported by adequate public facilities or services and will not adversely affect public services to the surrounding areas, or conditions can be established to mitigate adverse impacts on such facilities.

Dust/gravel spilled on road will get in the eyes (grit) of Bike + Motorcycle riders

Grid Prairie -> Flashing beacon is to ultimately maintained by county = taxpaying citizens, many of whom are in this room.

(G) The proposed use is not in conflict with the health and safety of the community.

yes it is! Up to 720 gravel trucks a day... how imperiling to everyone driving in the vicinity. Narrow winding portions of Grip Road are especially dangerous for motorists and bicycle riders. They have virtually no shoulder to find room when the need arises.

This is a high intasity use proposal. The truth is that death + injury will probably occur from this heavy trucking. Every 6.5 minutes (46 a day / 720 a day) a truck would pass along Prairie Rd. The new guardrail along Prairie Rd. is .7 Miles long. A bike might go 14 MPH and/or take 3 mins to transit that no shoulder zone. The likelihood of encountering a truck + trailer is somewhat less than 50%. But in any given day how many bicycle riders will there be? Please check my Math here as I am without a calculator during this hearing! This is definetly a Crunch zone + not to be ignored. The proposed use definetely is in conflict with current use and will negatively impact the health + Safety of the Community.

(21)

Monty McIntyre

A ubiquitous tire rubber–derived chemical induces acute mortality in coho salmon

ZHENYU TIAN ___ HAOQI ZHAO ___ KATHERINE T. PETER ___
MELISSA GONZALEZJILL WETZEL ___ CHRISTOPHER WUXIMIN HU ___
JASMINE PRAT ___ EMMA MUDROCK[...]EDWARD P. KOLODZIEJ ___ +18
AUTHORS AUTHORS INFO & AFFILIATIONS
SCIENCE
3 Dec 2020
Vol 371, Issue 6525
pp. 185-189
DOI: 10.1126/science.abd6951

Tire tread particles turn streams toxic

For coho salmon in the U.S. Pacific Northwest, returning to spawn in urban and suburban streams can be deadly. Regular acute mortality events are tied, in particular, to stormwater runoff, but the identity of the causative toxicant(s) has not been known. Starting from leachate from new and aged tire tread wear particles, Tian *et al.* followed toxic fractions through chromatography steps, eventually isolating a single molecule that could induce acute toxicity at threshold concentrations of ~1 microgram per liter. The compound, called 6PPD-quinone, is an oxidation product of an additive intended to prevent damage to tire rubber from ozone. Measurements from road runoff and immediate receiving waters show concentrations of 6PPD-quinone high enough to account for the acute toxicity events.

Abstract

In U.S. Pacific Northwest coho salmon (*Oncorhynchus kisutch*), stormwater exposure annually causes unexplained acute mortality when adult salmon migrate to urban creeks to reproduce. By investigating this phenomenon, we identified a highly toxic quinone transformation product of *N*-(1,3-dimethylbutyl)-*N*′-phenyl-p-phenylenediamine (6PPD), a globally ubiquitous tire rubber antioxidant. Retrospective analysis of representative roadway runoff and stormwater-affected creeks of the U.S. West Coast indicated widespread occurrence of 6PPD-quinone (<0.3 to 19 micrograms per liter) at toxic concentrations (median lethal concentration of 0.8 ± 0.16 micrograms per liter). These results reveal unanticipated risks of 6PPD antioxidants to an aquatic species and imply toxicological relevance for dissipated tire rubber residues.

Microsoft Bing | 20 meters to feet | Monty | 24580

ALL | IMAGES | VIDEOS | MAPS | NEWS | SHOPPING | MORE | Get the Wallpaper App

22

4,230 Results

Convert units

Length

20 = 65.6167979

Meter | Foot

FORMULA for an approximate result, multiply the length value by 3.2808399

What is 20 Meters in Feet? Convert 20 m to ft

https://whatisconvert.com/20-meters-in-feet

Convert **20 Meters to Feet.** To calculate **20 Meters** to the corresponding value in **Feet,** multiply the quantity in **Meters** by 3.2808398950131 (conversion factor). In this case we should multiply **20 Meters** by 3.2808398950131 to get the ...

EXPLORE FURTHER

20 meters to feet. How many ft in 20 m? - Saving	saving.org
20 Meters In **Feet** - How Many **Feet** Is 20 Meters? - ConvertOctop...	convertoctopus.com
20 Meters **To Feet** Converter | 20 m To ft Converter - appspot.com	meters-**to-feet**.appspot.com
20 Metres To Feet Converter | **20 m** To ft Converter - appspot.com	meters-to-feet.appspot.com
Convert **20 Meters to Feet** - CalculateMe.com	calculateme.com

Recommended to you based on what's popular • Feedback

Convert 20 Meters to Feet - CalculateMe.com

https://www.calculateme.com/length/meters/to-feet/20

26 rows · Meters to Feet Conversions. (some results rounded) **m. ft.** 20.00. 65.617. 20.01. ...

M	FT
20.00	65.617
20.01	65.650
20.02	65.682
20.03	65.715

See all 26 rows on www.calculateme.com

20 Meters to Feet Conversion - Convert 20 Meters to Feet ...

https://www.theunitconverter.com/meters-to-feet...

9 rows · **20 Meter** = 65.6168 Foot. How to convert **Meters** to **Feet** ? 1 **meter** is equal to 3.280839895 ...

	MILLIMETER (MM)	CENTIMETER (CM)	METER (M)	INCH (IN)
1 millimeter (mm)	1	0.1	0.001	0.03937
1 centimeter (cm)	10	1	0.01	0.3937
1 meter (m)	1000	100	1	39.37
1 kilometer (km)	1000000	100000	1000	39370

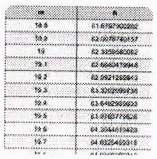
See all 9 rows on www.theunitconverter.com

20 Meters In Feet - How Many Feet Is 20 Meters?

https://convertoctopus.com/20-meters-to-feet

10 rows · To convert **20 meters into feet** we have to multiply **20** by the conversion

20 m to ft



20 meters equal 65.6167979003 feet (20m = 65.6167979003ft). Converting 20 m to ft is easy. Simply use our calculator above, or apply the formula to change th... +

Nanometer: 20000000000.0 nm

Millimeter: 20000.0 mm

Centimeter: 2000.0 cm

Micrometer: 20000000.0 µm

20 Meters To Feet Converter | 20 m To ft Converter
https://meters-to-feet.appspot.com/20-meters-to-feet.html

Suggest an edit

Related searches

- 20 ft **equals how many** meters
- meters to **us foot conversion**
- feet to meter **conversion**
- meter to feet **and inches**
- **convert 7** feet to **metric**
- **how many** meters **in a ft**
- m to ft **in conversion**
- **conversion chart** meters to feet

Written Testimony: 08/26/2022

Exhibit 23

Name (print)	Address	Pages	Email/Phone
23. Monty McIntyre	22473 Grip Road Sedro Woolley, WA 98284	22	360.927.8771

WIKIPEDIA 23

6PPD

6PPD is an organic chemical that is widely used as an antiozonant and antioxidant in rubber tires.[1] It is one of several *p*-phenylenediamine (PPD) additives used to protect various rubber materials.[2]

Three Factual Documents about 6PPD Submitted by Monty McIntyre 8-26-2022

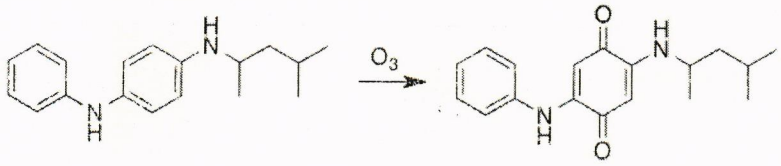
Contents

Manufacturing

6PPD is prepared by reductive amination of methyl isobutyl ketone with 4-aminodiphenylamine.[3]

Environmental impact

A 2020 study found that 6PPD (or already converted 6PPD-Q) released from vehicle tires gets converted by ozone to a previously unknown quinone analog 6PPD-quinone:

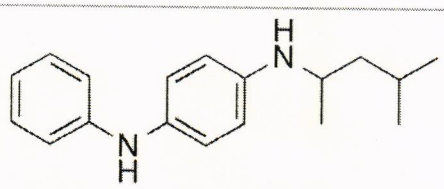


and that 6PPD-quinone is the toxic chemical in storm water runoff responsible for killing coho salmon before they spawn in freshwater streams.[4][5][6][7][8]

A 2022 study also identified the toxic impact on species like brook trout and rainbow trout.[9] The published lethal concentrations are:[9] [10]

- coho salmon: LC_{50} = 95 ng/L
- brook trout: LC_{50} = 0.59 µg/L
- rainbow trout: LC_{50} = 1.0 µg/L

6PPD



Names	
Preferred IUPAC name	N^1-(4-Methylpentan-2-yl)-N^4-phenylbenzene-1,4-diamine
Other names	*N*-(1,3-dimethylbutyl)-*N*′-phenyl-1,4-benzenediamine *N*-(1,3-dimethylbutyl)-*N*′-phenyl-*p*-phenylenediamine 6PPD DMBPPD
Identifiers	
CAS Number	793-24-8 (https://commonchemistry.cas.org/detail?cas_rn=793-24-8) ✓
3D model (JSmol)	Interactive image (https://chemapps.stolaf.edu/jmol/jmol.php?model=CC%28C%29CC%28C%29NC1%3DCC%3DC%28C%3DC1%29NC2%3DCC%3DCC%3DC2)
ChEMBL	ChEMBL1558796 (https://www.ebi.ac.uk/chembldb/index.php/compound/inspect/ChEMBL1558796)
ChemSpider	12553 (https://ww

A synthetic route to the 6PPD-quinone has been posted on ChemRxiv.[11]

See also

- *N*-Isopropyl-*N*′-phenyl-1,4-phenylenediamine a related antiozonant
- *N*,*N*′-Di-2-butyl-1,4-phenylenediamine - a phenylenediamine based antioxidant used as a fuel additive

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	w.chemspider.com/Chemical-Structure.12553.html)
ECHA InfoCard	100.011.222 (https://echa.europa.eu/substance-information/-/substanceinfo/100.011.222)
EC Number	212-344-0
PubChem CID	13101 (https://pubchem.ncbi.nlm.nih.gov/compound/13101)
UNII	HJD0U67PS1 (https://fdasis.nlm.nih.gov/srs/srsdirect.jsp?regno=HJD0U67PS1) ✓
UN number	3077
CompTox Dashboard (EPA)	DTXSID9025114 (https://comptox.epa.gov/dashboard/chemical/details/DTXSID9025114)

InChI

InChI=1S/C18H24N2/c1-14(2)13-15(3)19-17-9-11-18(12-10-17)20-16-7-5-4-6-8-16/h4-12,14-15,19-20H,13H2,1-3H3
Key: ZZMVLMVFYMGSMY-UHFFFAOYSA-N

SMILES

CC(C)CC(C)NC1=CC=C(C=C1)NC2=CC=CC=C2

Properties	
Chemical formula	$C_{18}H_{24}N_2$
Molar mass	268.404 g·mol^{-1}
Appearance	brown or violet solid powder
Density	1.07
Melting point	45 °C (113 °F; 318 K)

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Boiling point	260 °C (500 °F; 533 K)
log *P*	3.972
Hazards	
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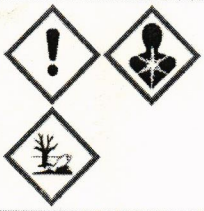
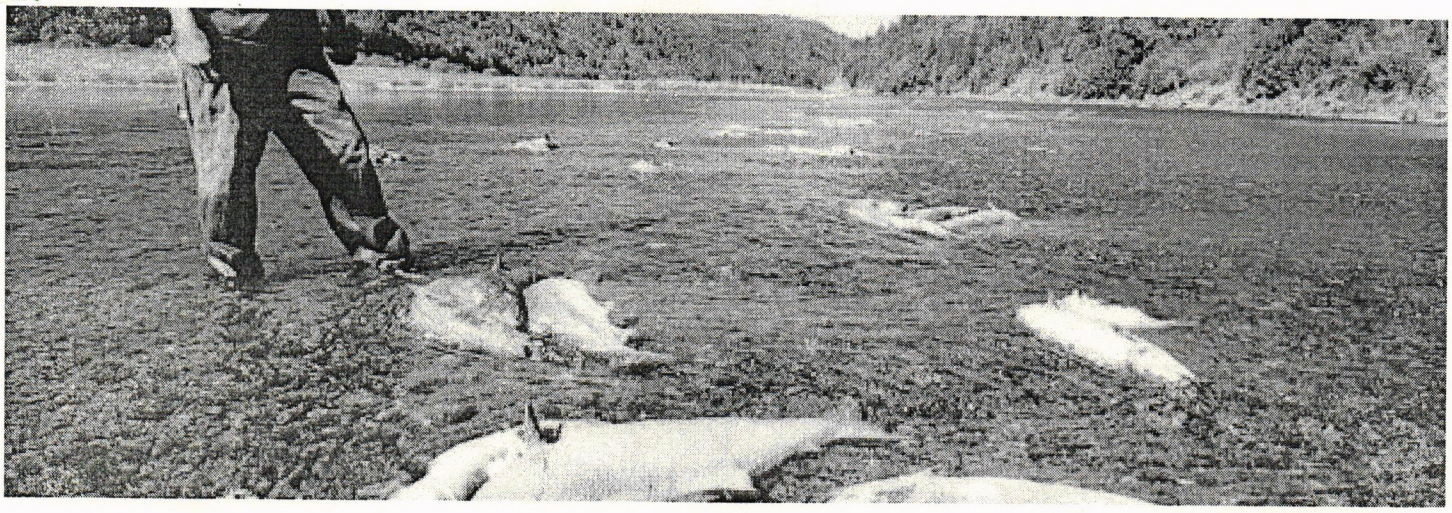
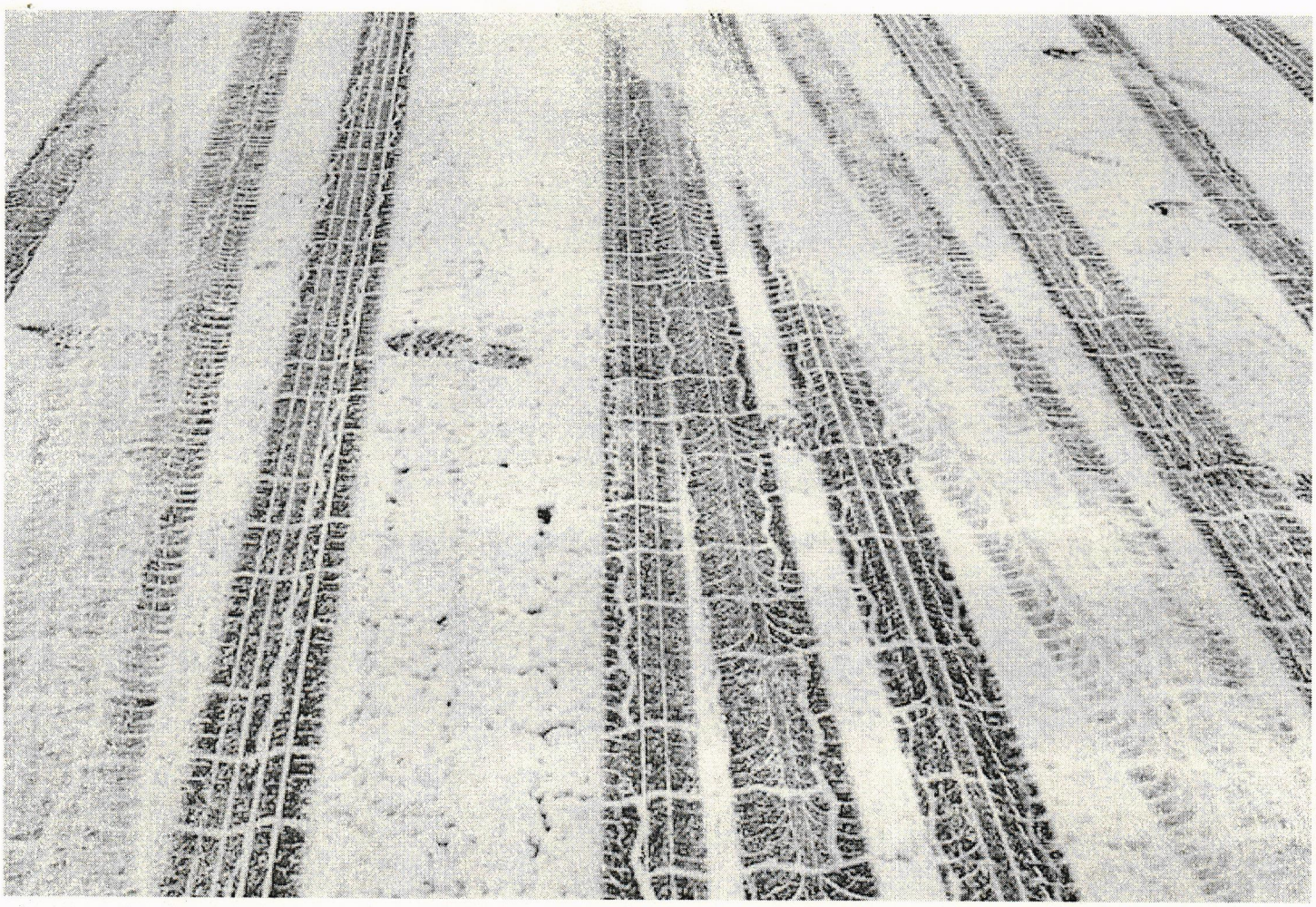
Pictograms	
Signal word	**Danger**
Hazard statements	H302, H317, H360, H410
Precautionary statements	P201, P202, P261, P264, P270, P272, P273, P280, P281, P301+P312, P302+P352, P308+P313, P321, P330, P333+P313, P363, P391, P405, P501
Flash point	204 °C (399 °F; 477 K)
Except where otherwise noted, data are given for materials in their standard state (at 25 °C [77 °F], 100 kPa).	
Infobox references	



What is 6PPD? Who Cares?

The effect of tire ware particles on coho salmon populations on the US West Coast.

By Benjamin Liu-May
May 13, 2022



Background

Tire wearparticles (TWPs) are ubiquitous in urban watershed systems and are a concern to
the species in the local water sources. TWPs are a potential ecological concern, as every time it rains, fish living downstream from said chemicals areexposed to environmental contaminants. In short, rain washes water solubleenvironmental contaminants, on roads, into nearby streams. These events are most outstanding in autumn, after the first rain of a dry summer, where the TWPs that have collected on the road are washed down all at once, contaminating bodies of water and the organisms that live in them.

For coho salmon on the US west coast, 6PPD and its transformation products pose a serious concern (Tian et al. 2020). 6PPD acts as an anti-degradant and antiozonant for

commercial car tires, and essentially prevent the tires from cracking (Tian et al. 2020, CDTSC 2021). Currently, the transformation product, 6PPD-quinone, is one of the largest ecological concerns that act in this mechanism.

How much 6PPD do you contribute to the environment?

For reference, a typical passenger car with four tires will contribute between 140 and 700 grams of 6PPD to the environment and 18-wheeler semi-truck will contribute 3600 and 18,000 g of 6PPD, over the course of a year (Tian et al. 2020). This contribution comes from general wear of the tire, as 6PPD makes up 2% of vehicle tires (Extance 2020).

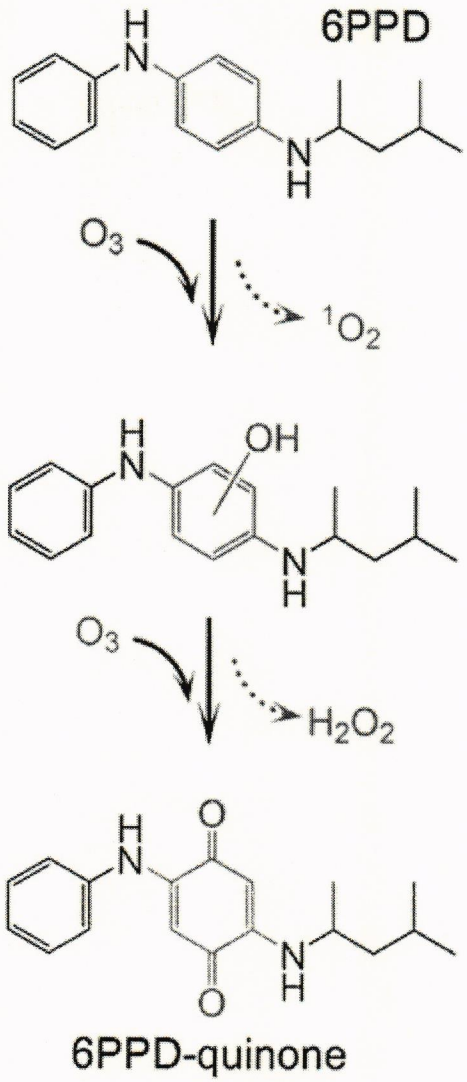
Original Infographic, Infogram. Information from Tian et al. 2020.

As stated herein, 6PPD isn't as large of a concern as its transformation product, 6PPD-quinone. 6PPD is relatively unstable, reacting with compounds commonly found in our air. The mechanism which forms 6PPD-quinone occurs when 6PPD is exposed to ozone.

Transformation of 6PPD to 6PPD-Quinone

Before the implementation of 6PPD, one of the most common forms of tire wear was ozone cracking. Ozone cracking in tires **occurs when ozone gas is exposed to a car's tires for an extended period of time**. This causes the tire rubber's polymer chains to break down, creating cracks in the sidewall

of the tire (Johannessen et al. 2022). 6PPD interacts with ozone at the tire surface, transforming it into 6PPD-quinone. The 6PPD-quinone protects the inner layers of the tire until the formed layer wears away. The process is repeated until a new tire is needed. The process was a great way to extend the life of a car's tires. However, the TWP left behind is causing problems for many reasons.

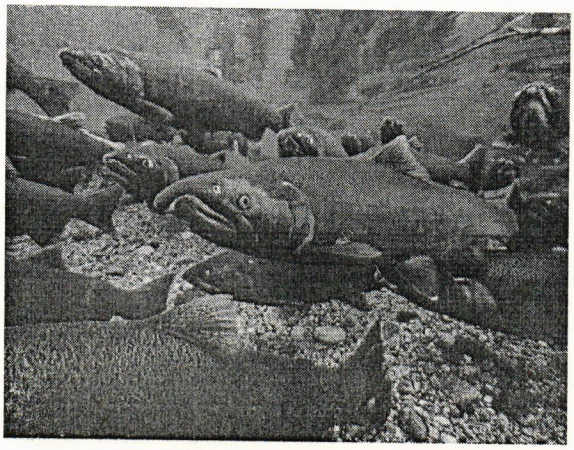


Mechanism for 6PPD's reaction with ozone to produce 6PPD-quinone (Tian et al. 2020).

Without it being washed into nearby bodies of water, there wouldn't be a major issue with 6PPD. The compound itself has a very small species sensitivity meaning only a small number of species are affected by it. A study from Markus Brinkmann found that only coho salmon, brook trout, and rainbow trout were the only species sensitive to 6PPD in North America (Brinkmann et al. 2022). However, both 6PPD and 6PPD-quinone are very water soluble and will dissolve in available water. The solubilities are 563 ± 203 ug/L and 67 ± 5 ug/L, respectively (Tian et al. 2020). This means that all available of the 6PPD and 6PPD-quinone will be washed away during a sustained rain, into nearby streams, killing the coho salmon in them.

Acute Toxicity in Coho Salmon

In order to realize the severity of the issue, one must understand how little 6PPD-quinone it takes to kill a coho salmon. A common test for a compound's toxicity is called an LC50 test. An LC50 test is the concentration of a compound



Coho Salmon (Long, 2014)

that is fatal in 50% of a test population. This specific test was carried out by exposing juvenile coho salmon to various concentrations of 6PPD-quinone for a 24-hour period. Tests found that coho salmon had an LC50 of 0.8 ug/L
of 6PPD-quinone in water (Tian et al. 2020, Varshney et al. 2022). This concentration was often exceeded from rain washing the 6PPD-quinone into nearby streams, indicating an immediate risk for coho salmon.

Impact on Fishing Livelihoods

"will not cause potential adverse effects on the general health safety + welfare"
(E) criterion
health, happiness + fortune

Traditionally, the fishing livelihoods of coastal
communities were threatened by the overfishing of salmon species (Knapp et al. 2007). However, 6PPD is expediting this process. The decline in quantity and
value of wild salmon has had a wide range of economic and social effects in the salmon fishing communities of the Pacific Northwest (Knapp et al. 2007).

· With less yield, fisherfolk aren't able to meet permit and boat costs.

· There is declining interest, from the children of fishing families, causing fishing to become a less appealing occupation (Knapp et al. 2007).

· With the decline of wild catch and the growing demand of salmon, a lot of pressure is placed on the salmon farming industry (Knapp et al. 2007).

- Fishing communities are having identity changes, as pressure to seek other job opportunities becomes a necessity with fishing no longer being a sustainable source of income (Knapp et al. 2007).

- Coho salmon also contribute to the ecosystem by returning ocean nutrients to the streams where they were born (Cederholm et al. 2022). They are a source of food for wildlife before and after they spawn. Local salmon species are often indicative of the ecosystem's overall health. For the PNW, coho salmon are considered indicator species and a keystone species (NOAA 2022). As water quality degrades and salmon populations decline, local vegetation and animal species will often see a decrease in fitness.

Salmon has a rich culture to the Pacific Northwest River Basin Tribes and are the center of everything from the diets, to the economy, to the religion (CRITFC 2015). For these communities, they believe that The Creator put them there because it is a place where the salmon always return (CRITFC 2015). Because of this, traditions like annual salmon harvests and first salmon feasts exist. These ceremonies always begin by blessing the water for playing the central role in serving the salmon (CRITFC 2015). Now, the very water being blessed by these people is the home for environmental contaminants that are a cause for the species' decline. Without salmon, the rich history of these people would cease.

Some researchers have predicted that if current trends don't change, by 2048, all ocean species currently fished will be gone (Lotze et al. 2006). Obviously, 6PPD isn't the only contributor to the decline of fish, or even a relatively big one, but it is another piece of an ever-

growing problem,
threatening a keystone species.

Columbia River Basin Tribes that use rely on coho salmon (Knapp et al. 2007)

Finding a solution

There are many remaining knowledge gaps when it comes to the fate, transport, and toxicological implications regarding 6PPD-quinone. With as many unknowns as there are, remediation processes remain on standby until further research can be conducted (Tian et al. 2020). In short, there are currently no methods to clean up the circulating 6PPD in our waters.

It should be noted that one reason 6PPD-quinone fish kills are less common than others is
due to 6PPD's high volatility, meaning the compound evaporates easily. A lot of neglect has resulted from this statistic, because it is believed that the problem evaporates away with the 6PPD. However, 6PPD-quinone has very low volatility, meaning it will persist in the environment for a long time, causing extended effects for coho salmon fitness and mortality (Tian et al. 2020). As car production and the number of drivers increases, the population size of an already protected salmon species will continue to decline.

6PPD reminds us that many synthetic compounds don't simply disappear upon
environmental release, and that there are negative impacts that come with the
use of such products. It is important to always dispose of synthetic products
such as antioxidants in an appropriate manner, so their transformation products
don't find their way back into our water systems (Tian et al. 2020). Ways
to decrease personal 6PPD contributions are to limit the amount of driving one

does, take public transportation when possible, and recycle or repurpose used tires.

Conclusion

6PPD and its transformation products are another issue brought on by modern industrialization. With the low LC50's and the high solubility of the compound, 6PPD-quinone has the perfect mechanism for contaminating watershed areas. Because ecosystems are still functioning, there has been very little urgency to find a solution for the issue species sensitive to the compound. For coho salmon, population size continues to decrease, for the convenience of drivers not having to change their tires as often. With no way to carry out area remediation, the issue will persist until this protected species goes
extinct. 6PPD reminds us that these types of contaminants don't go away because they aren't an immediate issue. Understanding the adverse effects of the ingredients many people use is a step in the right direction.

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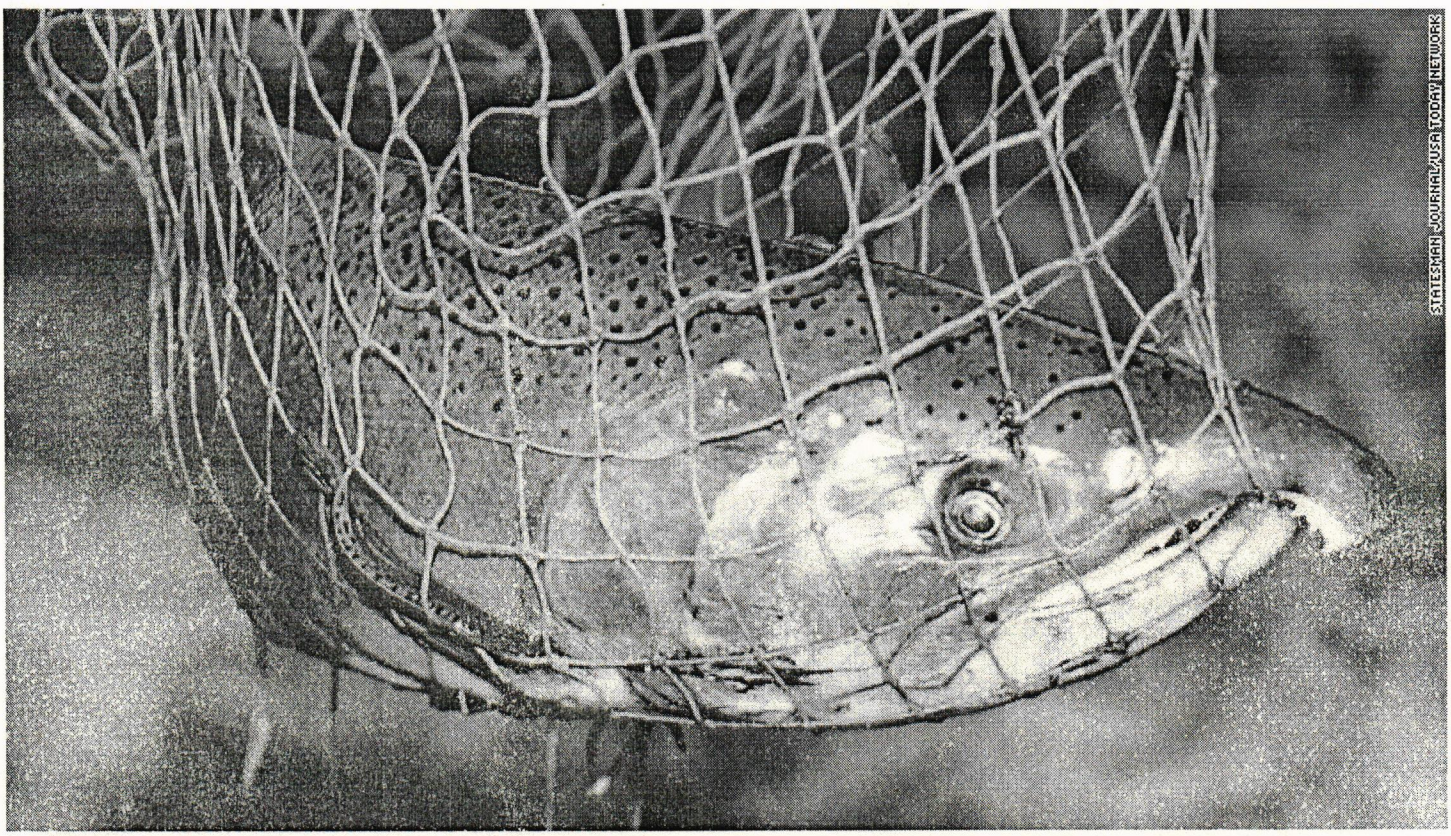
Salmon have been dying mysteriously on the West Coast for years. Scientists think a chemical in tires may be responsible

By Drew Kann, CNN

Updated 4:11 PM ET, Thu December 3, 2020



Coho salmon -- a species native to the US West Coast that have huge economic, cultural and ecological significance -- have been dying mysteriously for decades. Scientists now think they know why.

(CNN) — For decades, scientists say something alarming has been happening in the streams and rivers where coho salmon return from the Pacific Ocean to spawn along the West Coast.

After heavy rain events each fall, the fish have been turning up dead in huge numbers before they spawn, a mysterious phenomenon that has been the subject of intense research for years.

Now, scientists think they have found a key piece to this morbid puzzle -- and according to a new study, it's strewn all over North America's roadways.

It starts with a chemical antioxidant known as 6PPD, used in tires around the world to make them last longer.

However, as tire treads break down over time and leave behind bits of microplastics on roads, the 6PPD in them reacts with ozone to become a different chemical -- a previously unreported byproduct called 6PPD-quinone, scientists say.

This chemical is toxic to coho salmon. Researchers found its presence in roadway runoff samples taken from across the West Coast, leading them to conclude it's likely the main cause of the population decline.

A coho salmon is pulled from the water to be tagged by a habitat manager in Washington state. Scientists have been investigating the mass die-offs of these fish for years.

The findings were published Thursday in the journal Science, marking a crucial step toward ensuring the survival of these salmon, the scientists said.

"We believe that 6PPD-quinone is the primary causal toxicant for these observations of coho salmon mortality in the field," said Ed Kolodziej, the lead investigator for this study. "It's exciting to start to understand what is happening because that starts to allow us to manage these problems more effectively."

Coho salmon return from the Pacific Ocean each fall to spawn in streams and rivers, and can be found from Alaska all the way down into California.

One of five salmon species found in the Pacific Northwest's forests, coho are a favorite of sport fishermen and have huge cultural significance to many of the region's Native American tribes.

They're also a critical part of the food chain. The presence of healthy, spawning coho is a good indicator of the overall health of an ecosystem, said Kolodziej, an associate professor of civil and environmental engineering at the University of Washington.

These mysterious deaths have been a clear sign that coho salmon are in serious trouble.

The central California coho population is classified as endangered, and three other populations are now listed as threatened under the Endangered Species Act by the US Fish and Wildlife Service.

In a healthy stream, Kolodziej said that less than 1% of adult coho typically die before spawning.

But in these mass death events, anywhere from 40% to 90% of the fish can perish in the most affected streams, according to the researchers.

In the mass die-off events that have occurred in streams along the West Coast, anywhere from 40% to 90% of the salmon present have perished.

In the mass die-off events that have occurred in streams along the West Coast, anywhere from 40% to 90% of the salmon present have perished.

"We've been documenting these mortality events since the early 2000s," said study co-author Jen McIntyre, an aquatic toxicologist at Washington State University. "We suspect they've been going on for much longer than that, but nobody was looking for it."

McIntyre has been working to solve the mystery behind the coho deaths for decades.

Fish located in waterways closest to high-traffic urban areas have often fared the worst, Kolodziej said, which has led scientists to suspect for years that runoff from roadways was playing a role.

Waterways where these mortality events occurred, the scientists had previously reported, contained a chemical profile that was similar to roadway runoff.

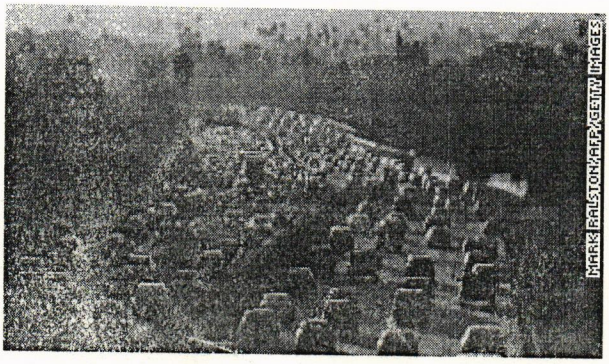
fish deaths.

Kolodziej credits lead study author Zhenyu Tian, a research scientist at the University of Washington-Tacoma, for playing a key role in making the discovery.

The scientists said more research is needed to understand whether this chemical is toxic to other aquatic species -- and even humans -- given its prevalence in the environment.

"It would be surprising that these salmon are the only sensitive species of fish," Kolodziej said. "To me, it's a simple probability argument. There are over 30,000 species of fish, and it would just be really unlikely that coho salmon are the only one."

Even with this chemical identified, the scale of the problem could make saving the fish difficult.



Related Article: Microplastics from your tires are likely reaching the most remote places on Earth, study finds

Roughly 3.1 billion tires for the planet's more than 1.4 billion vehicles are produced annually, the study said, and this chemical appears to be used in nearly all of them.

Previous studies have found that tire abrasion is one of the most significant sources globally of microplastics in aquatic ecosystems, and it's responsible for an estimated 30% of all the microplastic particles in our oceans.

Better treatment and management of runoff before it enters coastal streams is part of the solution, the study authors said, but source control and the development of "green" chemical substitutes for 6PPD in tires is also needed.

In response to the findings, Sarah Amick, the US Tire Manufacturer's Association vice president of environment, health safety and sustainability, called the study results "preliminary," but said the industry is committed to working to produce environmentally friendly products.

"The tire manufacturing industry and our member companies design tires for safety and durability purposes. And every element, every material that goes into a tire is focused on the motorist's ability to drive safely on that tire," Amick said. "Our industry is deeply committed to sustainability and understanding our products' impacts not only on the environment and wildlife, but also on human health as well."

ENVIRONMENTAL Science & Technology LETTERS

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Letter

Monty McIntyre

6PPD-Quinone: Revised Toxicity Assessment and Quantification with a Commercial Standard

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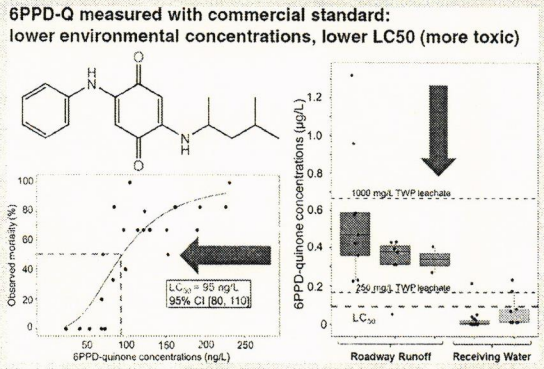
ABSTRACT: Stormwater exposure can cause acute mortality of coho salmon (*Oncorhynchus kisutch*), and 6PPD-quinone (6PPD-Q) was identified as the primary causal toxicant. Commercial standards of 6PPD-Q recently became available; their analysis highlighted a systematic high bias in prior reporting concerning 6PPD-Q. A 6PPD-Q commercial standard was used to re-confirm toxicity estimates in juvenile coho salmon and develop a liquid chromatography-tandem mass spectrometry analytical method for quantification. Peak area responses of the commercial standard were ~15 times higher than those of in-house standards, and the updated LC_{50} value (95 ng/L) was ~8.3-fold lower than that previously reported. These data support prior relative comparisons of the occurrence and toxicity while confirming the substantial lethality of 6PPD-Q. While environmental concentrations are expected to be lower, 6PPD-Q also was more toxic than previously calculated and should be categorized as a "very highly toxic" pollutant for aquatic organisms. Isotope dilution-tandem mass spectrometry methods enabled accurate quantification (limits of quantification of <10 ng/L) within environmental samples.



INTRODUCTION

Stormwater runoff is an important contaminant transport pathway in rapidly urbanizing areas,[1] and the complex mixtures of stormwater contaminants often substantially degrade receiving water quality.[2,3] While heavy metals and polycyclic aromatic hydrocarbons have long been regulated pollutants in stormwater, recent studies have reported numerous emerging organic contaminants such as various pesticides, pharmaceuticals, plasticizers, and vehicle and tire rubber-related contaminants.[4−7] Such contaminants can impact aquatic organisms; one compelling example is the stormwater-linked urban runoff mortality syndrome (URMS) of coho salmon (*Oncorhynchus kisutch*) in the Pacific Northwest (USA). Every autumn, recurrent acute mortality occurs when adult coho salmon return to near-urban creeks to spawn.[8] Across subbasins, mortality rates were most correlated with road density and traffic intensity.[9,10]

While investigating URMS, we previously identified 6PPD-quinone {6PPD-Q; 2-anilino-5-[(4-methylpentan-2-yl)amino]-cyclohexa-2,5-diene-1,4-dione}, an ozonation product of 6PPD, as the primary causal toxicant for long-standing observations of coho mortality.[11] Exposure experiments demonstrated acute toxicity at trace levels (LC_{50} of 0.8 μg/L), and retrospective analysis confirmed detection within roadway runoff and receiving waters, including during URMS events. Because the parent antioxidant compound 6PPD is ubiquitous in tire rubbers, 6PPD-Q would be expected to occur widely in roadway-impacted environments globally, although the hazards of its exposure and toxicity to humans and other organisms remain mostly unknown. Recent studies have confirmed the occurrence of 6PPD-Q in surface waters,[12,13] dusts,[14,15] and fine particulates.[16] Therefore, its potential toxicological effects and ubiquitous occurrence merit monitoring of 6PPD-Q to understand its environmental fate and enable management.

As a newly discovered transformation product, the toxicological experiments and quantification reported by Tian et al.[11] used our own 6PPD-Q standards purified from ozone synthesis and tire wear particle leachate (see the Supporting Information). Recently, a commercial standard and an isotope-labeled standard (D5-6PPD-Q) became available. During analysis, we observed a substantially higher (~15-fold) peak area response of the commercial 6PPD-Q standard versus those of our in-house standards (Figure S1). This observation implied a systematic high bias to the environmental and

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exposure concentrations we reported previously.[11] The lower responses of in-house standards could be caused by the limited solubility or sorption of 6PPD-Q, and we also are investigating possible oxidative polymerization and solid formation within our in-house stocks as potential fate outcomes for quinones.

To correct for potential inaccuracy in previous 6PPD-Q reporting due to the lower purity and/or performance of our in-house standards, we repeated our exposures to juvenile coho salmon with the commercial standard and revised our measured environmental concentrations. We also developed an isotope dilution analytical method based upon liquid chromatography-tandem mass spectrometry (LC-MS/MS). Using these improved quantitative methods, these data represent a timely communication of our current knowledge of the toxicity and expected environmental concentrations of 6PPD-Q.

MATERIALS AND METHODS

Chemicals. Commercial standards of 6PPD-Q (10 mg, 98.8% purity, solid) and D5-6PPD-Q (solution in acetonitrile, 100 mg/L) were purchased from HPC (Atlanta, GA). Methanol (LCMS grade), ethanol (absolute, 200 proof), and formic acid (HPLC grade) were purchased from Fisher Scientific. Deionized water (18 MΩ-cm) was generated by a Milli-Q Ultrapure Water System. The 6PPD-Q stock solution (stored at −20 °C) was made by dissolving 5 mg of the HPC standard in 50 mL of ethanol.

Coho Salmon and Exposure Experiments. Juvenile coho salmon used for exposures were obtained courtesy of the Puyallup Tribe of Indians, from the same stock (Diru Creek) and cohort (now age 1+, 30−64 g) as in the previous study.[11] Fish were reared at Washington State University's Puyallup Research and Extension Center on a 12 h:12 h light:dark cycle in a custom recirculating water system and fed commercial food (Biovita, Bio-Oregon, Oregon, WA). Fish system water was dechlorinated municipal water treated by reverse osmosis to Type 3 (>4 MΩ-cm, <0.25 μS/cm) in a RiOs 200 purification system (Millipore Sigma) and then reconstituted with buffered Instant Ocean (Blacksburg, VA) salts to pH ~7.6 and 1300 μS/cm conductivity at 10−13 °C. Experiments conformed to Experimental Protocol 04860-002, approved by Washington State University's Institutional Animal Care and Use Committee.

For exposures, glass aquaria were randomly placed in recirculating water baths to control temperature. Static aerated exposures were prepared by diluting various volumes of the 6PPD-Q stock solution in 10 mL of ethanol (350−1400 ng/mL), which was then mixed with 70 L of system water; negative controls were pure ethanol (10 mL). Solvent:exposure water ratios matched those of Tian et al.[11] Solutions and negative controls were made within 24 h of exposure. Larger exposure volumes (70 L) and fewer fish per aquarium ($N = 6$) were used here to accommodate the larger fish (30 L with 8−10 fish per aquarium used previously[11]). In two range-finding experiments (0.16−4.0 μg/L and 20−200 ng/L), five concentrations were tested, with five or six fish per concentration. To determine LC_{50}, six concentrations of 6PPD-Q and a negative control were tested. Exposures were repeated in triplicate (batches 1−3, across 3 weeks). Including 30 fish in the second range finding and 108 fish in the three definitive experiments, 138 fish contributed to dose−response exposures (Table S1; controls not included). Four fish jumped out of aquaria during exposures, so 134 fish contributed to the dose−response curve. In all aquaria, safe conditions of temperature (10−13 °C), conductivity (1170−1370 μS/cm), pH (7.6−8.0), and dissolved oxygen (>98% saturation) were verified before fish were transferred. Just prior to the introduction of fish, 1 L of exposure water was sampled from each aquarium, stored on ice or refrigerated, and extracted within 24 h for analysis. For all exposures, mortality rates were recorded at 24 h. Dose−response curves were calculated in R 3.6.2 using a two-parameter log−logistic model in the *drc* package.

Analytical Method. For quantification, duplicates of 200 mL of exposure water from each aquarium (corresponding to one concentration) were spiked with 5 ng of D5-6PPD-Q (100 ng/mL, 0.05 mL) as the internal standard, mixed, and equilibrated (20 min) before extraction. Solid phase extraction (SPE) used Oasis HLB cartridges (6 mL, 200 mg) (see the Supporting Information for details). Eluents were concentrated under a gentle nitrogen flow and volumized to 1 mL for analysis.

Quantification used an Agilent 1290 (Santa Clara, CA) Infinity ultra-high-performance liquid chromatograph (UHPLC) coupled to an Agilent 6460A triple-quadrupole mass spectrometer. Detection used electrospray ionization (ESI+) and multiple-reaction monitoring (MRM) modes. 6PPD-Q concentrations were estimated from a seven-point calibration curve [0.025−50 μg/L (Figure S2)] with D5-6PPD-Q as the isotopic internal standard (25 μg/L, identical to the concentrations of sample extracts). Detailed parameters and method information can be found in Tables S2 and S3 and the text of the Supporting Information.

Quality Assurance/Quality Control. Negative controls were included in batches 1−3 of definitive exposures for LC_{50} determination; all coho salmon ($N = 18$) survived negative controls. Negative controls were processed in a manner identical to that of dosed samples, and additional SPE method blanks were included by extracting and analyzing 200 mL of DI water using identical methods. After laboratory materials (e.g., rubber stoppers) with potential to generate background signals had been screened and removed, 6PPD-Q was not detected above the limit of detection in blanks. Intraday/interday precisions were determined by comparing 2.5 μg/L standard responses multiple ($N \geq 3$) times across one analytical batch or in batches across different dates. All exposure water samples were extracted in duplicate, and then measured and nominal concentrations were compared.

Matrix spikes were performed by spiking 6PPD-Q (5 and 50 ng/L) into Miller Creek (47°27′2.2″N, 122°20′44″W; Burien, WA) baseflow and DI water samples. Absolute recoveries were 58−95%; relative recoveries were 89−116% for the spikes (details in the Supporting Information). The limits of detection (LOD) and quantification (LOQ) were determined as the lowest concentrations giving signal:noise (S:N) ratios of 3 and 10, respectively. The instrumental LOD and LOQ were calculated from low-concentration 6PPD-Q standards (0.025 and 0.1 μg/L), and the method LOD and LOQ (reflecting the mass concentration via SPE) were calculated from spiked creek water samples.

RESULTS AND DISCUSSION

Peak Area Response and Toxicity Confirmation. Upon receipt, we first compared the commercial standard (HPC) to our in-house standard[11] across the same nominal concentration range and observed an unexpected difference between

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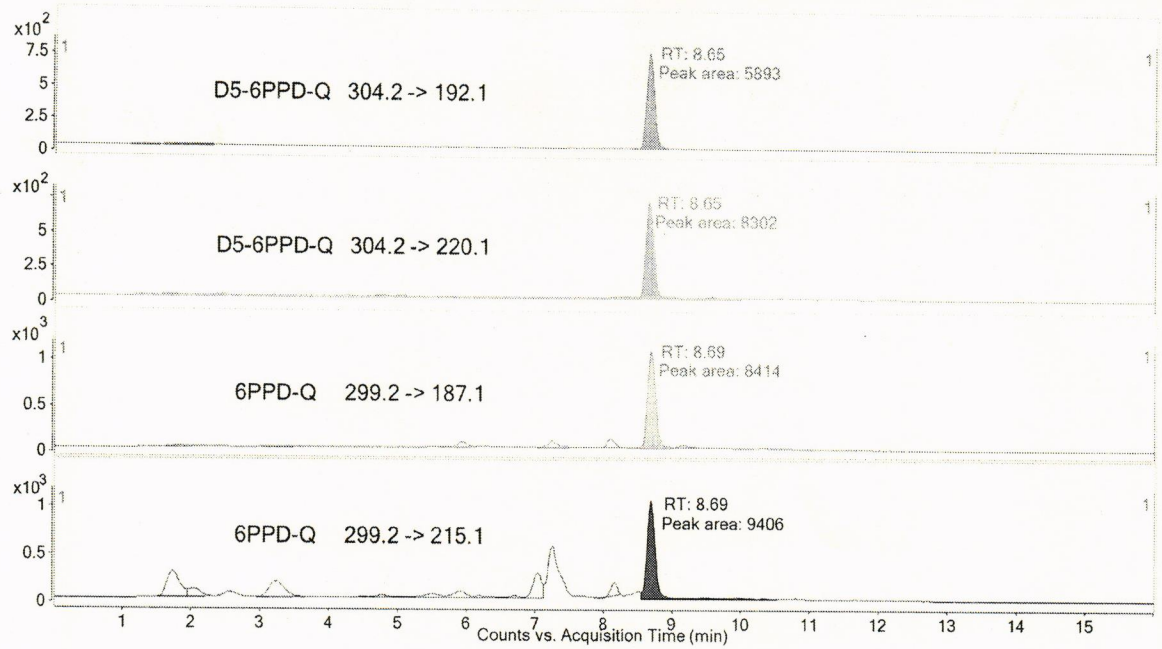

Figure 1. Chromatograms of 6PPD-Q in a stormwater-impacted creek measured by HPLC-MS/MS in MRM mode (measured concentration of 48 ng/L). The top two transitions were the quantitative and qualitative ions of D5-6PPD-Q (internal standard, spiked at 25 ng/L), and the bottom two transitions were the quantitative and qualitative ions of 6PPD-Q. RT, retention time.

the peak area responses of the two calibration curves (Figure S1). The peak area difference was confirmed on both qTOF-HRMS (~15-fold) and MS/MS (~18-fold) instrument platforms, with slight differences caused by the different sensitivities and/or linear ranges of the two instruments. Meanwhile, at identical nominal concentrations, the red/magenta color of the commercial standard solution was visually more intense than that of in-house standards. Ultraviolet–visible spectrophotometry also indicated substantially reduced absorbance for the in-house stock solutions versus the commercial standard stocks at key diagnostic wavelengths [e.g., 360 nm (Supporting Information and Figure S3)].

We then evaluated the toxicity of the commercial 6PPD-Q standard to juvenile coho salmon through two range-finding exposures. Our first exposure utilized a wide nominal concentration range (0.16–4.0 μg/L) that included our previously reported LC_{50} value (0.8 μg/L, derived from exposures using in-house stocks). Observed mortality rates were 100% (five of five) at 0.8, 1.8, and 4.0 μg/L, while four of five coho salmon died at 0.16 and 0.36 μg/L. Notably, coho salmon in the 4.0 μg/L aquarium were symptomatic in ~40 min and all perished in <2 h, which is faster than any of our prior observations. Another exposure series (0.02–0.2 μg/L) demonstrated 100% mortality (six of six) at 0.2 μg/L 6PPD-Q, 67% (four of six) at 0.1 μg/L, and 0% (zero of six) at 0.02, 0.04, and 0.06 μg/L. These results confirmed the substantial toxicity of 6PPD-Q for coho salmon but also indicated that our previous observations with in-house standards had systematically underestimated toxicity.

On the basis of mass spectrometry and these preliminary exposures, we concluded that the 6PPD-Q masses of our in-house standards were lower than we expected. In considering various options for mass loss, we most suspected that we had inadvertently formed a solid precipitate or similar impurity not detected by LC-HRMS or NMR during the end stages of our 6PPD-Q purification or handling processes. The reduced responses of in-house 6PPD-Q might be caused by lower than expected solubility and sorption losses to some filter and system materials; quinones also can undergo many interesting reaction types such as oxidative polymerization and other complexations.[18−20] Although we continue to investigate potential loss mechanisms, we cannot yet conclusively explain this mass loss. On the basis of our experience, while noting the potential for redox-active quinones to exhibit some complex and uncommon fate mechanisms, we caution other investigators to carefully track 6PPD-Q stability and recovery (e.g., peak area response, validated against commercial standards, measured vs nominal concentrations[21]) over time and under experimental conditions. Further research should characterize the fate and stability of 6PPD-Q under a broad range of conditions.

Quantification Method. To improve quantification accuracy, we developed an isotope dilution analytical method using the commercial standard and an isotopic internal standard (D5-6PPD-Q). Using high-performance LC-MS/MS detection, we evaluated transitions of both native and deuterated 6PPD-Q standards (Figure S4), optimized the instrumental parameters to improve sensitivity, and validated performance with environmental samples. These studies indicated that the complex matrix in stormwater and roadway runoff was the primary challenge to analytical performance, with matrix suppression at large extraction volumes (e.g., 1 L) sometimes completely suppressing 6PPD-Q detection.[11] Matrix dilution and reduced extraction (or injection) volumes mitigated matrix suppression and tended to improve performance; thus, we used 200 mL extraction volumes to optimize sensitivity. For location-specific stormwater or roadway runoff sampling, we recommend adjusting extraction volumes in response to observed matrix suppression or sample compositions. Spiking concentrations of the isotopic standard (25 ng/L in samples, 5 μg/L in extracts) were adjusted to reflect

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expected environmental concentrations while maintaining sufficient sensitivity.

Chromatograms of 6PPD-Q and D5-6PPD-Q in a creek stormwater sample are shown (Figure 1). With optimized parameters (Table S2), the instrument limit of quantification was 0.16 pg on column (31 ng/L in solutions). When applied to analysis of baseflow and stormwater samples in receiving water, method limits of quantification were 2.5 and 5.1 ng/L, respectively. In comparison with our original semiquantification method using LC-qTOF-HRMS,[11] the improved sensitivity came from the more specific MS/MS transitions used for quantification, an optimized processing procedure, the increased detector linear range, and higher standard purity. Spike recovery trials indicated 89−116% relative recovery of 6PPD-Q in creek samples and <3% intraday and interday variation. Given the highly toxic nature of 6PPD-Q and often trace (<100 ng/L) environmental concentrations present in runoff-impacted receiving waters, sensitive, accurate, and robust methods will be needed to maintain performance even at concentrations of ≤10 ng/L.

Updated Dose−Response Curve. To update the dose−response curve and LC_{50} estimate with the commercial standard, we performed additional 6PPD-Q exposures on juvenile coho salmon. Exposure concentrations were quantified using the LC-MS/MS analytical method; Table S1 reports nominal concentrations, measured concentrations, and mortality details. From the updated dose−response curve (Figure 2),

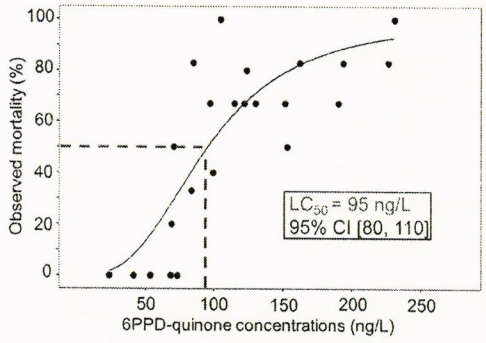

Figure 2. Dose−response curves for 24 h juvenile coho salmon exposures using the commercial HPC 6PPD-Q standard (N = 134 fish). All negative control fish survived and did not show any symptoms (N = 24; six in range finding and 18 in definitive exposure). Curves were fitted to a two-parameter logistic model. CI, confidence interval.

an LC_{50} of 95 ng/L was estimated for 6PPD-Q [95% confidence interval (CI [80, 110])]. This result was substantially lower than our previous result (790 ng/L, 95% CI [630, 960]) estimated from our in-house standards and was consistent with more dilute 6PPD-Q stock solutions. This ~8.3-fold difference in the LC_{50} is a combined result of the peak area response (~15-fold) and the 6PPD-Q recovery without internal standard normalization (60−70%).

Environmental Significance. The commercial standard analysis exposed a systematic high bias to our previously reported environmental concentrations and toxicity assessment for 6PPD-Q. Therefore, while *relative* comparisons between environmental concentrations and the LC_{50} in our previous work remain valid[11] (all retrospective analysis and dose−response curves were based on the same standard and quantification method), *absolute* concentrations should be revised lower on the basis of our current knowledge of the peak area response for 6PPD-Q. In general, the environmental concentrations and LC_{50} values for coho salmon should be approximately 1 order of magnitude lower than we previously reported.[11,17,22]

To illustrate the updated LC_{50} and observed environmental concentrations, we revised our previous occurrence data[11] while including additional 6PPD-Q data reported recently (Figure 3). Consistent with previous results, 6PPD-Q concentrations in almost all roadway runoff samples exceeded the LC_{50} for coho salmon and concentrations in runoff-impacted receiving waters, including storms where acute mortality occurred, were again near or above the LC_{50}. We note that environmental concentration data in Figure 3B, derived from archived sample extracts,[11] still employ semi-quantification without isotopic standard correction as an inherent aspect of retrospective analysis. Because they are not recovery-corrected, these data likely still underestimate actual concentrations by ~30−40%. With isotope dilution normalization, more stormwater samples would be expected to contain concentrations above the LC_{50}. Overall, these results re-confirm the lethality of 6PPD-Q to coho salmon and the substantial capability for mortality outcomes at environmentally relevant concentrations.

Since the initial identification, additional reports of 6PPD-Q occurrence[13−15,23] have confirmed its ubiquity in roadway-impacted environments at reported concentrations up to the low microgram per liter range. Because rubber products like tires, including end-of-life applications in recycled and repurposed materials, are ubiquitous in modern society, continued documentation of 6PPD-Q in various environmental compartments (e.g., soil, air, and biological tissues) is expected. As demonstrated by our quantitative difficulties, accurately characterizing previously unknown contaminants, especially unintentionally produced transformation products that lack commercial standards, remains a challenging and yet critical task for environmental researchers. The updated LC_{50} (95 ng/L) suggests that 6PPD-Q is among the most toxic chemicals known for aquatic organisms, at least to coho salmon.[21] Compared directly to pollutants categorized as "very highly toxic" to sensitive aquatic organisms (mortality at <100 ppb, Table 1, rationale in the Supporting Information), the LC_{50} for coho salmon (mortality at ~0.1 ppb) places 6PPD-Q among a very small group of pollutants, mostly organophosphate or organochlorine pesticides, with acute toxicity expectations at tens of nanograms per liter.

Many pressing knowledge gaps remain with respect to the environmental fate, transport, and toxicological implications of 6PPD-Q in tire rubber-impacted environments. Aspects of quinone stability and fate, representing contaminant structures less commonly considered and documented in environmental fields, are clearly both analytically and environmentally important to understand. The mechanisms of toxicity of 6PPD-Q to coho salmon need to be characterized, while its toxicity, both acute and sublethal, to additional organisms needs to be broadly evaluated, including insights into mechanisms of species-specific sensitivities.[21,22] Critically, 6PPD-Q reminds us that many synthetic chemicals do not simply disappear upon environmental release; we should be especially careful with chemicals like antioxidants that may have toxic properties[24] and are also designed to react. The lifetime mass balance of 6PPD, 6PPD-Q, and related chemicals in rubber tires that are subject to widespread environmental

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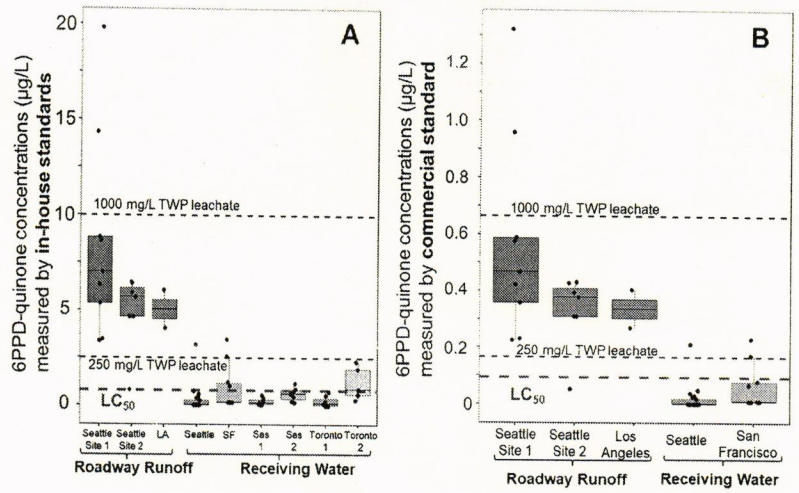

Figure 3. 6PPD-Q environmental concentrations and toxicity estimates derived from different standards. (A) 6PPD-Q concentrations estimated using in-house standards. Data for Seattle, San Francisco, and Los Angeles were taken from ref 11. Sas 1 and Sas 2 were snowmelt and surface water samples from Saskatoon, Canada, reported in ref 12. Toronto 1 and Toronto 2 were surface waters from Toronto, Canada, reported in refs 13 and 23. (B) Updated 6PPD-Q concentrations and toxicity thresholds estimated using a commercial standard (HPC), reflecting data reported in ref 11. The updated concentrations are based on retrospective UPLC-qTOF analysis of archived sample extracts, divided by a factor of 15 (qTOF peak area difference between the in-house and commercial 6PPD-Q standards). 6PPD-Q was quantified in roadway runoff and runoff-impacted receiving waters. Each symbol corresponds to duplicate or triplicate samples; boxes represent first and third quartiles. For comparison, the 95 ng/L LC_{50} value for juvenile coho salmon and detected 6PPD-quinone levels in 250 and 1000 mg/L TWP leachate are included. Modified from ref 11 with permission from AAAS.

Table 1. Comparison of the Toxicity of 6PPD-Q to Coho Salmon with Those of the Most Toxic Chemicals for Which the U.S. Environmental Protection Agency Has Established Aquatic Life Criteria[a]

chemical class	name	most sensitive species	LC_{50} (ppb)	95% CI	ref	CMC (ppb)	EPA document
OP	parathion	*Orconectes nais*	0.04	0.01−0.2	25	0.065	EPA 440/5-86-007
quinone	6PPD-Q	*O. kisutch*	0.10	0.08−0.11	this study	not available	not available
OC	mirex	*Procambaris blandingi*	0.10	not reported	26	0.001	EPA 440/5-86-001
OP	guthion	*Gammarus fasciatus*	0.10	0.073−0.014	25	0.01	EPA 440/5-86-001
OP	chlorpyrifos	*Gammarus lacustris*	0.11	not reported	27	0.083	EPA 440/5-86-005
OC	endrin	*Perca flavescens*	0.15	0.12−0.18	28	0.086	EPA 820-B-96-001
OC	4,4′-DDT	*O. nais*	0.18	0.12−0.30	25	1.1	EPA 440/5-80-038
OP	diazinon	*Ceriodaphia dubia*	0.25	not reported	29	0.17	EPA-822-R-05-006
metal	cadmium	*Oncorhynchus mykiss*	0.35	not reported	30	1.8	EPA-820-R-16-002
OC	methoxychlor	*O. nais*	0.50	0.25−1.8	25	0.03	EPA 440/5-86-001
OC	dieldrin	*Pteronarcella badia*	0.50	0.37−0.67	28	0.24	EPA 820-B-96-001
OP	malathion	*G. fasciatus*	0.76	0.63−0.92	25	0.1	EPA 440/5-86-001
OC	toxaphene	*Ictalurus punctatus*	0.8	0.5−1.2	31	0.73	EPA 440/5-86-006

[a]The rationale for the toxicity comparison can be found in SI text. Abbreviations: OP, organophosphate; OC, organochlorine; CMC, criterion maximum concentration; CI, confidence interval.

dispersal should also be thoroughly characterized to advance the safe use, disposal, and recycling of these materials as we work toward more environmentally benign and sustainable consumer products.

■ ASSOCIATED CONTENT

Supporting Information

The Supporting Information is available free of charge at https://pubs.acs.org/doi/10.1021/acs.estlett.1c00910.

Details on the use of in-house standards, water extraction, instrumental methods and parameters, ultraviolet−visible measurement, toxicity comparison rationale, nominal and measured exposure concentrations of 6PPD-Q, chromatograms, mass spectra, and standard calibration curves (PDF)

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Notes

The authors declare no competing financial interest.

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Written Testimony: 08/29/2022

Exhibits 1 - 3

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(1.)

8.29.2022

Dear Hearing Examiner,

My name is Lori Ledbetter, and my husband Rod and I live at 21715 Grip Rd. We have lived here for about 34 years. We raised our 2 children here. My daughter just retired from working as a Prosecuting Attorney for the past 18 years. My son is a magician. They both grew up here and have witnessed the rural living.

We enjoy seeing the neighbor children walk, ride bikes, or push lawnmowers down the road. We are very concerned this gravel pit will change everything. The noise, dirt, dust, the safety on the roads.

I ask you to come up and check out the roads. There are too many corners that the trucks will not be able to navigate safely, including the entrance/Exit to the mine.

Also the hours of operation and truck trips need to be limited, and

We also are asking that the trip route be established and maintained.

We used to walk back on the property where the proposed mine is and the wildlife is abundant! We are very concerned for the fish & wildlife that will be affected and ask that they are protected to the best of your ability. We own 10 acres and are concerned our property values will decrease. Our property is exactly one mile off Prairie Rd at 21715 Grip Rd, one property inbetween is and the Gravel Pit.

Once again I ask you to come out and look at the roads. The S curves on Grip Rd, the (L) turn off Grip onto Prairie, the 90 degree corners on Prairie Rd!!

We know a person who drives truck for Miles & Gravel who states he will be quitting when this mine goes thru "because it will be too dangerous"

Thank you for hearing, Rod & Lori Ledbetter

2. Laura Brakke

Floods in eastern Kentucky were a man-made disaster, and we know exactly who is to blame

forwardky.com/floods-in-eastern-kentucky-were-a-man-made-disaster-and-we-know-exactly-who-is-to-blame

Guest Author

August 17, 2022

A car is submerged in flood waters along Right Beaver Creek, in Garrett, Kentucky, following a day of heavy rain, on July 28, 2022. *(© By Pat McDonogh / USA TODAY NETWORK)*

The areas of eastern Kentucky hit by record rainfall and devastating floods in July are almost tailor-made for disaster. The area contains steep hillsides and narrow valleys. In some of these, communities are crammed into a tight space that also contains the local river, railroad tracks, a highway, and a few rows of houses. Raise the level of the river, and the water has literally nowhere to go except through those roads, railways, and homes.

Even so, many of these communities have survived generation after generation snuggled down in these narrow valleys without seeing anything like the kind of disaster that swept through the region in 2022. As Weather Underground reported, the floods that struck the region in July crushed all past records. The North Fork Kentucky River, normally barely more than a foot deep, rose by 18 feet in just 10 hours, topping out at a level 9 feet above the base of surrounding homes. At least 39 people died, and more than 700 had to be rescued from rooftops, trees, and instant islands surrounded by raging water.

This flood event came just two days after historic flash flood events in St. Louis and was driven by the same astounding levels of downpour, which saw some areas receive over a foot of rain in just a few hours. The channel of war, hyper-saturated air that drove these record rainfalls is itself exactly the sort of event predicted by climate models for decades. As the air becomes both warmer and wetter, more such events will occur.

But it's not just the man-made climate crisis that brought dozens of deaths and millions of dollars in destruction to Kentucky. The disaster is also the direct result of exactly the same activity that generated the climate crisis—coal mining for use in power plants.

As the *Louisville Courier-Journal* reports, it's not just that eastern Kentucky saw a huge amount of rain falling into areas with steep hills and narrow valleys; it's that the environment of those valleys had already been devastated by decades of mining.

The combination of contour strip mining and mountaintop removal mining in the area means that hillsides that might otherwise have been covered in large stabilizing vegetation were instead bare, or covered over only by stunted vegetation growing in the wake of half-hearted attempts at post-mining reclamation. Especially in the case of mountain-top removal, the whole structure of the surrounding hills has been transformed. Natural routes of drainage

developed over thousands of years have been filled with rubble or choked by silt. Some of these forms of mining are also known as "valley fill" specifically because as the mine removes the top of the mountain, they drop the waste material into the surrounding space.

The result irrevocably alters the surrounding drainage. Water goes into different areas than it did in past decades, flows through even narrower spaces than it did before mining began, moves more rapidly down steeper slopes, and reaches surrounding rivers with more energy due to the lack of protective vegetation.

Everything about the way surface mining takes place in areas like eastern Kentucky makes flooding more likely. Everything about it makes flooding worse.

Over a decade ago, four coal companies operating in the area settled a lawsuit with the state in which they admitted their contribution to flooding in eastern Kentucky. A study of one stream in the region showed that mining on the slopes above had increased peak flows in the stream by 77-81% during a heavy rain. Companies are supposed to reclaim slopes, plant vegetation, and restructure streams so that flows are returned to pre-mining conditions, but a number of ridiculous regulatory rulings—including one boosted by Trump during his first year in office—have allowed companies to dodge these obligations.

Where companies are still obligated to reclaim the land, they often avoid this by the simple method of declaring bankruptcy immediately after the mining is completed. Even in that 2011 lawsuit, two of the four companies had already declared bankruptcy by the time the ruling was handed down. States are supposed to guard against this by demanding an up-front insurance bond that is large enough to cover the cost of post-mining activities, but the truth is that "mining-friendly" states get around this in a number of ways, mostly by allowing companies to be "self-bonding." That is, self-insuring. The result of this is events like the $100 million bill left behind after a mining company gouged a toxic hole in the Fort Belknap Indian Community in Montana, then declared bankruptcy and walked away.

As the coal mining industry collapses, this kind of story is becoming more and more common. Perversely, Republicans in Congress and state legislators have responded to this growing crisis with calls to "lift the regulatory burden" on mining companies, selling people on the idea that jobs today are all that matter, even though they know that destruction will eventually come in their wake.

And what do you know … it's eventually.

As the *Courier-Journal* notes:

> This disaster was man made. Strip mining and mountaintop removal reengineered the land and left communities and towns towards the valley floor exposed to record levels of storm runoff. Then the coal companies left and government officials let them offload their bonds tied to abandoned strip mining operations and their promise to clean up their mess. Logging companies also helped, clear cutting hillsides of trees capable of absorbing large amounts of moisture and holding the ground in place and leaving behind fields of kudzu, an invasive plant ill-suited for the job of mountain integrity. Throw in increased greenhouse gas emissions from the global industrialization of the 20th century and you have all the ingredients needed for continued and more frequent catastrophes.

The disaster in eastern Kentucky was generated by increased CO_2 in the atmosphere that was the direct result of burning fossil fuels, chiefly coal used in power generation.

The disaster in eastern Kentucky was generated by altered topography and stripped hillsides that are the direct result of surface mining coal through mountaintop removal.

The disaster in eastern Kentucky was generated by regulatory and legislative failures that allowed coal waste to be dumped into streams and for companies to evade their obligation to restore and remediate the damage caused by mining.

The flood waters might have been caused by rain, but there was nothing natural about this disaster.

> The flood of July 28, 2022 was not a natural disaster. To imply this flood, along with so many other weather-borne catastrophes plaguing our world, is a natural disaster is to say three things: We don't know why it happened, we don't know how it happened and we don't know how to prevent the next one. But we do know the answers to these questions. We've known them for some time. .

The obligation that we owe the people affected by this disaster isn't just to help them recover and rebuild. It's also to outlaw the kind of mining that generate this disaster and which is *totally unnecessary* in a declining market for coal. It's also to phase out self-bonding and make these companies put up the actual cash necessary to ensure reclamation.

Companies that can't afford the restore the land can't afford to mine it. It should be that simple, and not just for coal.

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Written by Mark Sumner of Daily Kos staff. Cross-posted from Daily Kos.

3

Gravel Mine Comments:

Recent Driving Experiences:

I have had two near misses with Miles' gravel trucks in the last month. They actually happened on two consecutive trips into town on Prairie Road just east of the two 90' turns. You heard mention of the new guardrails that are a hazard along there from others. New guard rails were just installed there a year ago or so after new telephone poles were installed. You can clearly see that they were installed to protect the telephone poles, not us drivers. On the contrary, they have created a severe traffic hazard because they installed them way too close to the fog line. This was done because the embankment is too steep there for them to be installed any further away. Obviously they didn't care enough about traffic safety to spend the money to widen the embankment. The rails are so close that it looks for all the world that you are going to scrape up against them, especially the first time you encounter them. The distance from the fog line to the rails is approximately 8 inches at the narrowest stretch. Directly across from them the gravel shoulder narrows down to approximately 4 inches before the ditch drops off. So as two vehicles pass through there going opposite directions, there is a grand total of 1 foot of usable shoulder space for the vehicles to use. This stretch is where I encountered the Miles trucks heading eastbound, and both times the trucks came over the center line several inches, leaving me almost no room to avoid them with my 4 inch shoulder width. So much for Miles' professional drivers. In their defense, I know having been a truck driver in the past, that it is very hard to see how close things are down low near the right front of the truck. It is a certainty that those won't be the last times the truckers cross over. And these were just single trucks with no trailers.

On a subsequent trip heading west on Prairie, I encountered approximately 7 cars coming the opposite direction in the 2 miles from the Grip Road intersection to Old 99. 4 of those 7 vehicles crossed over the centerline to various degrees coming towards me. This type of experience is not uncommon along there because the lanes are so narrow that many drivers can't stay in their own lanes.

These are the types of experiences the truck drivers will be dealing with if this ill-conceived proposal goes through. The Miles rep was boasting about how safe their drivers are, but even if that were so, they are not the only drivers on the road. For one thing, we have a very large number of senior citizens who live in this area, with poor eyesight and poor reflexes. They need to be protected from these hazards.

Gravel demand:

I was shocked to hear the Miles rep Monday actually admit that their were other pits further away that could be mined if this project is denied. I was going to point out that Miles tried to convince everyone that this gravel was desperately needed 6 years ago, and that even having experienced the biggest housing boom Skagit County has ever seen over the intervening years, the proposed pit was not needed. As we head into a much cooler real estate market, and declining overall economic conditions now, this gravel mine really won't be needed.

I'll also point out that I have been hauling gravel of various sizes, shapes, and types of rock up to my property for 30 years now. I use different pits for different needs, and know that there are gravel pits all over this County, and I have never heard anyone besides Miles moaning about a shortage. We haven't needed this pit for the last 6 years, and won't for the next 6 years either. That should give Miles and the county time to bring the roads FULLY up to code before this proposal can be considered again.

A little history:

I wanted to recount a brief conversation I had about Prairie Road with former long-time Skagit County Commissioner Ken Dahlsted approximately 20 years ago. At that time, they were in the process of a major upgrade to the eastern half of Prairie Road. If you drive down there, which you really must, you will notice that the shoulders are much, much wider than the west end. There is actually room to walk or bike along it relatively safely. The biggest complaints I hear from friends down there are drivers using it as a speedway. As in 90 mph plus. I asked Ken if they were going to widen the west end of the road also, and he told me that they had actually had the project scheduled, but dropped it due to pushback from the community on the west end who wanted to maintain the rural character of the road. I was in agreement with the residents even though the fight was already over before I knew about it. My point is though, that the county felt as if that road should have been upgraded 20 years ago. The current Planning Dept. now seems to think that after about a 500% increase in car traffic since then, and with then adding 50 heavy truck and trailer loads every day, that voila! it is now almost perfectly safe. More about the Planning Dept. later.

Yellow flashing beacon:

When I first read about this element of the proposal, I could barely believe my eyes! This proposal is fraught with perils that our Planning Dept. has overlooked. Or just don't care about. First of all, the concept that those of us who use that road should have to be delayed every time a loaded truck comes onto Prairie is infuriating to say the least! Why should we have to sacrifice our time and gas money sitting idly by while each truck makes its long slow climb up from the stop sign at Grip Road, and then crawls slowly down the road for several hundred feet before getting up to speed? Does our time not matter? This is going to be a major disruption to the traffic on Prairie. Oh, and all the residents that use this road but haven't any awareness of what might be coming their way yet? The county is going to have some seriously pissed off commuters, that's all I can say. Just a little quick math for you. I will be forced to add 5 minutes of travel time allowance every time I have appointments in town if the beacon goes in. I probably average an appointment of one kind or another every week, so that comes out to 260 minutes over the course of a year. So I will have to sacrifice 4 1/2 hours of my time every year so Miles can get their gravel that we don't need out of that pit. Prairie is a major commuting arterial, so all of those folks will have to adjust their schedules unless they leave early enough. All the parents who drive their kids to school, and the school buses themselves, same. It is the only connecting road between 9 and 99/5 in all of northern Skagit County so is vitally needed. Clogging it up with 50 trucks a day is immensely unfair to us all. We shouldn't have to donate our time for the next 25 years. That is way too much of an ask for all of us in the general region.

As to the safely of the beacon, neither Miles nor the county seem to have thought of anything except giving drivers enough time to stop before the intersection. The first issue that jumped out at me is that cars will be backing up at those beacons very regularly, as it takes a long time for a loaded truck to get fully up to Prairie. If you happen to be the car at the end of the line, completely hidden or partially hidden from the view of traffic coming up behind you, all you can do is hope and pray that the car whizzing up around the bend is paying full attention to the beacon. Again, we have a lot of senior drivers out here. And texting teenagers. I have been in an exposed position similar to what will exist here before, and I would not be writing you this today had I not been aware enough to leave myself enough room to quickly whip onto the WIDE shoulder alongside the car in front of me. The Winnebago whizzing up from behind, brakes pouring smoke, came to a stop about a foot behind the car that was in front of me.

What was left of me would have been crammed in between there someplace. The other traffic scenario that this beacon will create, is that once the gravel truck is finally out on Prairie, it will of course take some time to get up to speed. As it heads west past the F&S Grade intersection where the road straightens out, the cars behind it will start frantically trying to pass it. Often more than one car at a time even. Commuters need to get to work, so they aren't going to dawdle along behind the truck if they don't absolutely have to. The lanes on Prairie are so narrow that even passing a passenger car is a scary proposition. Cars passing those trucks will have to thread the needle again, and hope that the Miles professional driver can stay in his lane. If not, there is only about a one foot shoulder there, and a drop off of 10 feet or so into a swamp. No guard rail of course. And of course the drivers going east at that time on Prairie will have to deal with the oncoming cars, often unsafely passing the trucks. This yellow beacon idea is completely ridiculous! We would have the dubious distinction though, of having the only permanent warning beacon of any kind on any road in the county. For 25 effing years! To fill the coffers of a private company that could easily get the rock they need elsewhere. They need to just convert that property back to timber extraction where it should have stayed in the first place!

Miles' traffic studies:

Miles' has presented erroneous and dishonest traffic analyses. On the original study, it was stated that most of the trucks would head west to I-5, then south to Cook Road, back east to 99 and then north to the Belleville pit. Two problems there. First the Bow Hill Road, even without the extra trucks, almost literally fell off the side of the cliff. The cracks in the road had been visible for quite a while before the road was suddenly closed with no warning for about 6 months. Please drive that road. That is the width, and those are the shoulders Prairie would need to have to safely transport the gravel. The other issue is there was no analysis of the traffic impact to the Cook Road/I-5/99/RR interchange. That overpass is way beyond capacity during peak hours, with the cars routinely backed up way down the freeway shoulder trying to get off on the northbound off ramp. Currently the paving on the overpass itself is crumbling down to pea gravel. This interchange needs to be completely rebuilt, and quickly. The last thing needed here is another 50 trucks and trailers on top of the very heavy truck traffic it already gets.

I couldn't believe the performance of the Miles traffic analyst. First, their last minute offer to widen the Grip Road 90' turns was truly insulting. After 6 years of completely stonewalling the residents of our neighborhoods, they trot this out because they are sensing that things might not be going their way. They tried to wait out and wear down the folks out here, and I bet were shocked that we're all still here in opposition.

First off, I refuse to believe that you can get those trucks around those corners within the existing right of way. If it is possible to physically fit those trucks around without encroachment, there wouldn't be an inch to spare. So still completely unsafe. Plus it is only a little tiny drop in the bucket compared to the overall road improvements that are needed.

What really fried me was his statement that the 10,000+ annual truck trips generated by the gravel mine wouldn't cause any more traffic accidents than there are currently on Grip Road. How stupid does he think we are?

The analyst did provide a little humor though. Piping up unannounced that Google Earth shows Prairie Roads has wide shoulders, or something to that effect. There are no paved shoulders at all on that road. Maybe 3 inches. There are some stretches that have wider gravel shoulders than others, but the shoulder widths vary all over the place, down to 4 inches even, as previously discussed. The other humorous remarks were in answer to a question

about the impact the beacons would have on emergency vehicles. He bizarrely stated they he had spent many hours on Prairie Road on more than one occasion and never saw or heard any emergency vehicles. Now there is a scientific study. Just so happens that there have been at least 5 emergency calls with multiple respondents coming down Prairie Road just this last month alone. That is atypical, but a better study than his! It is NOT okay for these vehicles to be held up by these stupid beacons. Once again. This is THE major east/west arterial in northern Skagit County, not some little country lane.

Hubris:

The way that the residents in the area have been treated throughout this process, both by the county and Miles, is unforgivable. I don't know if you can imagine what it feels like to know your county government doesn't care if you live or die, but that is exactly what is going on here, big picture. They have been warned over and over and over again of the accidents that will inevitably happen as a result of this traffic, yet they still persist in pushing ahead with only the teeniest mitigation imaginable. They think they know better than we do about traffic safety, and they are willing to roll the dice, gambling with OUR lives. It is all about money to them. WE are the traffic experts on these roads. They have clearly demonstrated that they don't have an effing clue about the conditions of these roads. Moreover, they just don't give damn. Could you callously disregard locals residents worried about getting hurt or killed without taking any action to reduce the risks involved? I surely hope not. As for Miles, I know their reputation, and wouldn't expect any consideration from them. They are the worst kind of business partner, and will never be welcome in our neighborhoods!

Mr. hearing examiner, I implore you to throw this atrocity of a SUP where it belongs, in the garbage. Please let our neighbors enjoy life again without this specter hanging over us.

David Goehring
20002 Double Creek Lane
Sedro Woolley