

# **The Future of Atmospheric Effects in Filmmaking**

Made possible by the ASC Future Practices Committee  
at the request of ICG Local 600



Blade Runner 2049 (2017), Roger Deakins, ASC

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*The Exorcist* (1973), Owen Roizman, ASC

## PURPOSE

The purpose of this document is to:

- 1) Describe how atmosphere is used in filmmaking
- 2) Provide context for how the ASC embarked on exploring this topic
- 3) Report on the science and safety of the substances used
- 4) Discuss the effects of atmosphere on the transmission of SARS-CoV-2 / Covid-19
- 5) Provide definitions and reference material for further study

## THE PATH OF LIGHT

Atmospheric effects have been part of cinema for over 100 years, and have been used in photography and painting for much longer. Light streaming through clouds, fog, pollen, dust and ocean spray have always made for spectacular images. Those microdroplets and aerosols that scientists discuss are exactly what makes a rainbow possible.

Cinematographers sometimes use atmospheric effects and volumetric lighting in their images to create depth, mystery, grittiness or ambiguity. It lets us witness the otherwise invisible path that light travels. It changes the very quality of the light, softening the palette and offering alternative elements to compose and light an image. The shafts of light become actual sources of light themselves - something that cannot be replicated easily with computer generated effects. A brief collection of atmospheric frames can be found throughout this report - it's difficult to imagine cinema without it.

## HOW DID WE GET HERE?

The ASC began in 1919 during the last great pandemic. While we strive for artistry, the work we do also requires cinematographers to be a technical bunch, with an involvement in the safety of the cast & crew.

Producers, studios and labor guilds worked to craft guidelines for a safe return to work during the Covid pandemic. Each entity chose their own specialist(s) to advise them on their recommendations.

On June 9, 2020, the International Cinematographers Guild released their recommendations, one of which specified:

*Curtail the Use of Atmospheric Smoke, Haze and Fog while a determination is made whether it is safe for use during this period*

*We recommend that the use of atmospheric smoke, haze and fog be limited in all enclosed spaces, until such time that we can validate that it is safe in the following three ways:*

- *We must confirm that the use of atmospheric smoke, haze and fog does not increase the ability for the virus to be transmitted.*
- *We must determine exactly what ventilation is necessary to ensure safety in enclosed spaces filled with atmospheric smoke, haze and fog.*
- *We must have a plan for how to deal with members of the cast and crew who, due to working in atmospheric smoke, haze and fog, exhibit symptoms indicative of COVID-19 infection (cough, runny eyes, etc.) as a result of such exposure so it will not cause the loss of work for these employees.<sup>1</sup>*

By June 12<sup>th</sup> Los Angeles County published their protocols, and DGA-SAG-IA-399 released *The Safe Way Forward* guidelines.

None of the aforementioned groups banned the use of atmosphere on set, nor did they recommend a curtailment of the use of atmosphere - only that our current safety protocols be supervised by a Health Safety Supervisor:

*The HSS shall be provided with the resources and staffing necessary to oversee or to provide directly adequate, daily attention to the many exposure control activities. Examples of this include attention to ventilation (including the use of foggers or atmosphere), PPE selection, fit testing, and maintenance, and appropriate surface cleaning and disinfecting practices.<sup>2</sup>*

*The Safe Way Forward* did however endorse and encourage the use of atmosphere for certain uses, “crew will have access to top-level gear, like fogging systems,” for sanitation<sup>3</sup> (later in this report we will discuss how this might prove to be a serendipitous revelation).

The AMPTP’s Industry-Wide Labor Management Safety Committee Task Force issued guidelines that did not ban the use, nor set specific limits regarding the use of atmospheric effects. While ventilation was recommended, it was not exclusive to atmospheric effects.

The differences in guidance prompted a lot of questions from cinematographers and special effects technicians, as well as those familiar with the safety of the glycol-based fluids we commonly use in our industry.

Many of us also asked: was there a scientific hypothesis that the use of atmosphere could increase the transmission of SARS-CoV-2, or could the opposite be true - that there may be a risk reduction by using specific atmospheric products? Were these reactions, bans, and limits regarding on set use of atmosphere based on conjecture and emotion, and not on science? The entire topic deserved a closer look and an opportunity to learn.

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<sup>1</sup> *Local 600 Principles, Key Recommendations and Recommended Departmental Protocols*, June 2020

<sup>2</sup> *The Safeway Forward*, page 12, section 2h

<sup>3</sup> *The Safeway Forward*, page 13, section 4

## JUNE 17<sup>TH</sup> MEETING

Since Dave Perkal, ASC was involved in both the ICG Safety Committee as well as the ASC Future Practices Committee, the leadership at ICG suggested that Future Practices could host a meeting to explore the science behind modern haze compounds, and what experts knew at that point about its effects on SARS-CoV-2 and Covid-19.

On June 17<sup>th</sup> the meeting was held with the following panel<sup>4</sup>:

- Monona Rossol, Industrial Hygienist and IATSE Safety Consultant
- Dr. William Esposito, Doctor of Public Health, CIH, Columbia University, NY
- William Jordan, former Deputy Director of Programs at the EPA (40 years at EPA)
- Etienne Grignard, Managing Director at Grignard, manufacturer of fog & haze fluids
- Grishma Desai, ASQ PMI Lead Chemist, Quality Control Manager at Grignard

It was a privilege to have so much expertise available to filmmakers.



*Citizen Kane* (1941), Gregg Toland, ASC

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<sup>4</sup> Efforts were made to include other experts who consulted on *The Safe Way Forward*, but scheduling was not possible.

## BACKGROUND: TYPES OF ATMOSPHERE

We often refer to atmosphere as *smoke*, and sometimes the resulting effect we're after is that of something burning, charred or its aftermath. It's important to distinguish between how we actually achieve those effects and the materials we use.

Burning matter releases airborne particulate matter and often carcinogens, and therefore pollutants. Throughout our meeting, Dr. Esposito and William Jordan were in agreement with regards to *burn pollution*. (*Transcript pages 29, 31, 48-52, 94-95, 116*). Our safety guidelines do not allow for such smoke to be used for atmospheric fog or haze, especially not for interiors with cast & crew nearby. There are exceptions such as pyrotechnics and cigarettes, yet even an exterior campfire is often created with propane for both health and safety. The bottom line is we generally do not use combustion to create atmospheric effects.

Instead, we have 4 industry approved types of substances used for fog and haze effects, which have been the most common used in our industry for the last 20 years:

- Highly Refined Mineral Oil (including Soybean Oil & Methyl Esters)
- Glycerin (aka glycerol)
- Glycols (water based)
- Cryogenic gasses

Glycerin (glycerol) is not used nearly as often as the water-based glycols for fog & haze. A couple of fluids merely use glycerin as a minor ingredient, sometimes at a 5% concentration. It is common for someone to confuse glycerol with glycols, which are entirely different materials.



DP: Martin Ahlgren, ASC

## SAFE VS UNSAFE

There are a number of materials that are **not** safe, as outlined in CSATF's Safety Bulletins:<sup>5</sup>

*Products containing the following chemicals/substances should not be used for atmospheric effects due to their possible health effects:*

- *Known human carcinogens, including tobacco smoke (except when required to film a scene where such smoke results from an actor smoking tobacco).*
- *Fumed and hydrolyzed chlorides.*
- *Ethylene glycol and diethylene glycol.*
- *Aliphatic and aromatic hydrocarbons including petroleum distillates.*
- *Hexachloroethane and cyclohexylamine; and*
- *Butylene glycol 1,4.*

The above list is what we **do not use**, due to their possible health hazards.

CSATF Safety Bulletin 10A approves the following substances for safe use:

- Propylene glycol, butylene glycol (1,2 & 1,3), polyethylene glycol, triethylene glycol, and dipropylene glycol
- Glycerin
- Mineral oils (highly refined only)
- Cryogenic liquids and gases such as carbon dioxide, dry-ice, liquid nitrogen – which we rarely use for fog & haze effects in the film industry.

Note that butylene glycol is on both lists. The 1,4 isomer is unsafe, while both the 1,2 and 1,3 isomers are safe. Regardless, we do not see much butylene glycol 1,2 or 1,3 use.

The safest glycols the EPA has studied for a wide range of uses across all industries happen to also be the most commonly used glycols to generate haze and fog effects:

- Propylene Glycol - or PG
- Dipropylene Glycol - or DPG
- Triethylene Glycol - or TEG

These glycols are mixed with a greater part of water, which are the backlit micro-droplets we see suspended in the air. Various manufacturers will make formulas combining 2-3 of these glycols, or simply use only one. A Safety Data Sheet might state: "may contain one or more of the following" and list all 3 glycols along with water. The EPA considers these 3 glycols in a class of their own, and allows their use interchangeably with regards to human safety and exposure limits. Any ambiguity in mix percentage is to protect the intellectual property of the

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<sup>5</sup> CSATF Safety Bulletins 10 & 10A:  
<https://www.csatf.org/production-affairs-safety/safety-bulletins/>

manufacturers who have put a lot of work into testing and production, but these glycols long track record of safety speaks volumes.

The EPA requires substances considered safe for human consumption to be re-evaluated for their safety every 10 Years. William Jordan explained that for the EPA's most recent re-evaluation of these 3 glycols: "the agency concluded that triethylene glycol (TEG) is of very low toxicity by the oral dermal and inhalation routes of exposure. There's no evidence that special sensitivity [exists in] infants and children. Based on the available data the propylene glycol, dipropylene glycol, [and] triethylene glycol pose no toxicological risks, and it's rare in my experience [to see] that EPA didn't even think it was worth spending time to do a risk assessment because it was so obvious to them that it was safe. And in fact, TEG is recognized in the EPA Safer Chemicals program as a green circle material meaning it's verified to be of low concern. The Food and Drug Administration [has] approved it as indirect food additives and certain food contact substances. You can see the citations to the EPA regs I look[ed] for didn't find any OSHA, NIOSH, ACGIH, CPSC limits, but Grignard company did ask an independent consulting organization called Intrinsik to look at this, and Intrinsik applied the US Consumer Products Safety Commission classification criteria for identifying hazardous substance[s], and they concluded TEG is not classified as a toxic or corrosive or skin irritant or strong sensitizer when used under foreseeable conditions. [In the] ANSI study I've mentioned they had a TWA time weighted average of 10, which corresponds to what I came up with at peak exposure limit of 40. So, in summary, the assessments are pretty much in line saying that people can be exposed up to 10 milligrams per cubic meter without any particular concern." (*Transcript page 45-46*). William Jordan further reported that "You can find a lot of studies referenced in the NIH hub chem database on these chemicals that [t]hey reached basically the parallel conclusion as EPA has reached." (*Transcript page 40*)

## PHYSICAL SYMPTOMS OF ATMOSPHERIC EFFECTS

In some instances, the use of atmospheric fluids may result in some people experiencing temporary irritation in the nasal cavity or throat. These vary with the substances used and are mentioned at the very beginning of Safety Bulletin 10<sup>6</sup>, and additionally at the end with regards to children, the elderly, and others who may have respiratory conditions.

Glycols such as TEG are hygroscopic, meaning they easily absorb water from the air, and any material containing water. Some people may experience dry eyes and a dry throat, usually remedied by hydrating. In rare instances a person will not be able to tolerate atmosphere and should not work with it.

Highly refined mineral oils can deposit a thin layer of residue on surfaces. Some people have reported gastrointestinal symptoms when working with these atmospheric oils.

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<sup>6</sup> CSATF Safety Bulletins 10 & 10A:  
<https://www.csatf.org/production-affairs-safety/safety-bulletins/>



In most cases, whether with mineral oil or glycols, symptoms are temporary and usually appear with chronic or heavy use.

The issue that ICG raised of whether these symptoms could be mistaken for a Covid-19 infection, or prove to be an issue with health questionnaires, is a valid concern. To date, we have not received any reports of someone missing work due to the use of atmosphere during the pandemic. There is also a possibility from reports we've received that the masks we are wearing for protection against Covid-19 may be offering some protection against the irritation some people experience from atmosphere. In particular, N95's and KN95's could prove to offer protection, and it would be interesting to see studies conducted on this topic.

## **THE GOOD, THE BAD & THE UGLY**

Even though triethylene glycol (TEG) has been studied since the 1940's and has continually been proven to be very safe, glycols weren't commonly used in fog and haze products until 1984. This was when Rosco Labs introduced a new propylene glycol-based fluid, which won them a technical Academy Award for their innovative work.

The landscape of fog & haze fluids was far less regulated before 2001. Etienne Grignard reports of a lack of product quality control amongst manufacturers, and "bathtub blending"<sup>7</sup> by special effects technicians in the 1990s and beyond. There are also accounts of low grade industrial mineral oil being used, which would likely have contained impurities and even carcinogens.<sup>8</sup>

Overall, the period from 1990 to about 2005 was somewhat of a wild west as the choice of materials expanded. The use of harmful custom "bathtub blend" formulations created by individual special effects technicians has diminished greatly as awareness has increased.

Monona Rossol, who has been instrumental in bringing awareness to these issues, cites studies that mostly concerned themselves with Broadway shows and musicals that used glycols, mineral oils (often unrefined) and pyrotechnics - all in one show. During this period, those productions often reached or exceeded the limits of safe exposure for chronic use.<sup>9</sup> Since then, our industry has improved quite a lot. CSATF safety bulletins, and training from organizations such as ASEPO have greatly improved our knowledgebase, including a better sense of respiratory awareness.

## **RESPIRATORY AWARENESS**

Fresh air exchange and ventilation has always been important, and now it's a requirement in the mitigation of the airborne transmission of SARS-CoV-2. Ventilation exchanges new air from outside into the space that the cast & crew occupies. Our committee has also found

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<sup>7</sup> Transcript Page 35.

<sup>8</sup> *Theatrical Fog Exposure Assessment Methods, Exposure Limits, and Health Effects* (Dec 15, 2017 for CSATF). Shannon R. Magari, ScD, MS, MPH – Christopher J Wesley, CIH – Reviewed by Mark Katchen, CIH, FAIHA of Phylmar Group, Inc.

<sup>9</sup> Mt. Sinai / Environ Study, aka Moline Report for Equiity League (2000) & UBC SHAPE Study (2003)

that some Safety Officers will approve air that is being circulated internally through an HVAC system that's outfitted with HEPA filtration, or an air treatment system. The panel agreed that if an HVAC system is incapable of reloading a space with fresh or HEPA filtered air that opening the elephant doors (or windows and doors on location) may be the best way to receive new air. This will be a challenge whether we use atmospheric haze or not.

On a large sound stage, most of the air feeds and returns are higher up, and any HVAC air circulation and ventilation are unlikely to reach the crew's breathing zone. As Monona Rossol pointed out, "Now you're talking about the very thing that I complain to ASHRAE (*The American Society of Heating Refrigerating and Air Conditioning Engineer*) about. The best exchange is at the ceiling, so you really need to move everything up to the ceiling. We really do want them to use under-the-floor systems that have been the new ASHRAE design, because that guarantees that the air actually goes through the breathing zone, and the worst situation is in the winter when the air is coming in warm and it wants to rise anyway, you have almost all of your air exchange occurring at the ceiling and the people down where the rubber meets the road are getting bubkis." (*Transcript – page 63, lines 5-10*)

Finally, for sound recording purposes, we also stop the AC & fans when we're rolling, which prevents any sort of air movement - therefore we need to consider ventilation breaks on a regular basis, regardless of atmospheric use.



DP: Martin Ahlgren, ASC

## THE ELIMINATION OF ATMOSPHERIC EFFECTS

Efforts to eliminate the use of atmospheric effects altogether are not new, and one example of this is by industrial hygienist Monona Rossol, first writing in her 2010 report:<sup>10</sup>

### **ARTS, CRAFTS & THEATER SAFETY**

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#### **THEATRICAL FOG, SMOKE & HAZE: ARE THEY HAZARDS?**

Atmospheric fog, haze and smoke effects are unique theatrical hazards. No other industry deliberately pollutes the air of its workers and its customers, the audience. These air pollutants are generally glycols, glycerin, mineral oils, and/or cryogenic gases.

It is important to note that Monona Rossol has labelled CO<sub>2</sub>, or dry ice, as a pollutant. The idea that CO<sub>2</sub> is a respiratory hazard is a position that is not held by any regulatory body, nor is that their position on any of the other cryogenic gasses which CSATF allows.

CO<sub>2</sub> does present a safety hazard to humans if enough is used to displace too much oxygen in a given space. However, this does not change the definition of CO<sub>2</sub> to that of a pollutant. The air we breathe is mostly nitrogen (also not a defined as a pollutant), but if we make a confined space 100% nitrogen, then the space is now hazardous to humans. This does not redefine nitrogen as a “pollutant”. Doing so misses the safety issues we really need to address when using these gasses.

## POLLUTANTS

We need to make sure that the label of *pollutant* is clearly defined and scientifically accurate, because when it is misused by mis-categorizing elements as pollutants, we run the risk of unfairly eliminating safe products. Understandably, there is a common misperception that if you can see something in the air it must be a pollutant. However, in actuality, many true pollutants in the air are invisible, and many visible elements in the air are safe.

Both Dr. Esposito and William Jordan agreed that with their proper use, fog and haze fluids are not considered pollutants as these materials are atomized, not burned during use. They reported that because these substances are not burned, no particulate matter or carcinogens are released – therefore they should not be classified as pollutants. (*Transcript pages, , 31, 48-52, 94-95, 116, 112*).

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<sup>10</sup> Monona Rossol, *Theatrical Fog, Smoke & Haze: Are They Hazards?* (2010, revised 2018)

Monona Rossol insists that all of the aforementioned approved materials are hazardous, despite the fact that the EPA, NIOSH, OSHA, ANSI, and CSATF have agreed they are safe when properly used.

Monona Rossol generally tries to indicate these substances are hazardous in her 2 reports:

*Theatrical Fog, Smoke & Haze: Are They Hazards?*  
(Sept 17, 2010, revised June 8, 2018)

*Theatrical Special Effects Air Quality Standards*  
(Aug 18, 2005, revised March 3, 2016)

These two reports from Monona Rossol largely reference the findings of these two studies:

*Mt. Sinai / Environ Study, aka Moline Report*  
(2000) lead author: Dr. Jacqueline Moline

*UBC SHAPE Study*  
(March 2003) by Teschke, Chow, Brauer, Netten, Varughese, Kennedy

Additionally, Monona Rossol relies heavily on reference studies from 1995 and 1996, as well as shows from the late 80's. These studies, and all of Monona Rossol's reporting on them, conflate materials (including some of which are no longer allowed to be used<sup>11</sup>), combining them together producing synergistic results for which there is no deduction method employed regarding any definitive conclusion with respect to each of the individual material substances themselves. While the reports mention materials and conditions in 1999, they are no longer relevant more than 20 years later.



*There Will Be Blood* (2007), Robert Elswit, ASC

<sup>11</sup> UBC Shape Study: page 5 "The literature does not indicate whether refined or unrefined mineral oils are used in fog generation. Unrefined mineral oils have been designated as carcinogenic to humans (group 1) by IARC21

## PRACTICAL WORKING ENVIRONMENTS

There is a more recent 2005 study<sup>12</sup> that showed actors, musicians, and stagehands with the longest exposures exceeding 800 hours had the worst symptoms of respiratory tract irritation, while those with lower exposure hours had little to no symptoms. You'd have to work 80+ days in fairly heavy atmosphere, all day, to reach that level of chronic exposure. Again, this is if you worked in a mix of fairly heavy glycol fogs with mineral oil (possibly unrefined) and possibly pyrotechnic smoke, since this report again did not differentiate these substances. There's little doubt that some stage shows, during the time period in the 2005 report, exposed their cast & crew to large amounts of these fogs, haze & smoke for weeks on end, in a way that we simply don't see in the filmmaking industry.

Finally, Jacqueline Moline, the lead author of the *Moline Study* of 2000 - also known as the *Mt. Sinai/Environ Study* - has written a letter to caution to using their study to set future guidelines. In furtherance of Moline's letter of caution, Monona Rossol concurred emailing us to point out, "Be aware that I talked to Moline some time ago about this study and had her make it clear in a letter that these standards should not be used, as they have been, to set national or industry standards. I've attached the letter for your files to go along with this old study."

Moline's letter of July 17, 2015 states:

*"The guidance levels we set forth were specific to Actors. They do not apply to other theater workers who might sustain longer and larger exposures, such as stagehands and musicians. The guidance levels do not speak to newer products that might be in use since again, we were analyzing only the constituents of theatrical smoke and fog that were used in 1999. Any effort to use our study as a sole basis for a health standard would be ill-advised, since the data are over 15 years old, and were limited to one working group who have very specific exposures based on their time on stage when stage effects were used (which in certain cases, might be quite limited).*

*I believe further studies of theatrical exposures should be done to evaluate the health effects for all theater workers, along with a comprehensive toxicological review of the effects of the specific compounds that are used today... not based on a literature review that is over fifteen years old."* (July 17, 2015)<sup>13</sup>

This might be one of the reasons why Monona Rossol's report was updated in 2016, but when we sought more guidance on how one might arrive at her conclusion that all atmospheric effects are unsafe for cast & crew, we did come to an agreement that glycol substances were not at fault.

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<sup>12</sup> *Effects of Theatrical Smokes and Fogs on Respiratory Health in the Entertainment Industry*

Comparative study from May 2005, doi: 10.1002/ajim.20151

<https://pubmed.ncbi.nlm.nih.gov/15828073/> <https://onlinelibrary.wiley.com/doi/abs/10.1002/ajim.20151>

<sup>13</sup> Reference the entire *Moline Letter* included at the end of this report.

Dave Perkal, ASC asked Monona Rossol about her reports regarding materials that were mixed at the time, and if there was indeed an unspecified mix ratio how can we be sure which individual material was the cause of the irritants in your reports? To which Monona Rossol, replied “Because there [is] some separation between the glycol and the oil mist.” (Transcript page 84)

## CONFLATION OF MATERIALS

If one were to use the approach of separating substances that can cause symptoms in a study, then the approach taken in the 2000 *Moline Report* is entirely different because it conflated mineral oils and glycols into one study. Additionally, Monona Rossol takes much of the basis of her 2016 report from the *UBC SHAPE Study* of 2003, wherein she continues to select data that used unrefined mineral oil, refined mineral oil and or “home brews” rather than glycols, despite the fact that glycols were widely in use in 2016<sup>14</sup>.

Monona Rossol states in her report: “Questionnaires filled out by fog-exposed performers in these studies all indicate that significant numbers of those exposed have symptoms and a majority of fog-exposed individuals *firmly believe* that these symptoms are related to the special effects”. Here, she relies on anecdotal epidemiological self-diagnoses from questionnaires without regard to each specific material component used to make the atmosphere effect.<sup>15</sup>

The *SHAPE Study* specifically reported that of the workers surveyed, “Glycol-using machines were usually used with fluids supplied by the manufacturer, but this was not so for other machine types. Nearly half the technicians sometimes formulated their own fluids.”<sup>16</sup> and that, “Mineral oils were used in about half of the productions in the cross-sectional survey and exposures, particularly in movie and television productions, exceeded exposure standards.”<sup>17</sup>

Such working conditions would clearly risk major irritation & health symptoms on a stage show having used mineral oils beyond what is recommended. One could surmise from this study that it takes more mineral oil to achieve the same visual effect as compared to other materials such as Glycol.

Dave Perkal, ASC asked Monona Rossol, “in quotes from your report, the average personal mineral oil mist exposure in this study exceeds the proposed ACGIH TLF TLV for mineral oils at the level requiring an exposure plan for severely refined oils [and] according to the British Columbia WCB regulation, it exceeded the standards set by the movie and television productions. But none of the glycol samples exceeded the current eight-hour glycerin mist standard. So, when you look at...”

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<sup>14</sup> SHAPE is a tripartite organization to promote Safety and Health in Arts, Production, and Entertainment, who asked the University of British Columbia to help investigate several questions related to the safety of theatrical smokes and fogs.

<sup>15</sup> USA 829 revised 2018, Page 4

<sup>16</sup> UBC SHAPE Study, section 9.1.1 page 85

<sup>17</sup> UBC SHAPE Study, section 9.3, page 89

Monona Rossol, answered, “But they found irritation in each one of the, the populations.”

Dave Perkal continued, “So that's the SHAPE documents section 9.1.4, page 87. So, what we're looking at here is I'm finding a tough way to separate all these components, right? Because [t]here's some components that look like they're safe, and some components which I would never use. [I] lived through those days. I don't want to go back to those days and we're looking for a way as cinematographers to go, *what component can we use that has been tested [as] safe?* Let's separate the two if you're mixing salad dressing together, is it the oil or the vinegar that's causing it to react that way and just use the product that's safe.” (*Transcript, page 85, lines 19-25*)

Monona Rossol continued, “Yeah, well I have to go back to reading all of my report. But I know there are some studies that look at throat irritation with just the glycols and glycerin. So, I know that it is, and I know that FDA definitely is listing it as a respiratory toxicant. So, you know, if you're going to look at those, and that's an inhalation route. That's the other thing when they when you keep talking about *there's all kinds of data* that is not by inhalation, and that's the only route that you give a damn about it - and in that case, there's just very little data for it for these chemicals.”<sup>18</sup>

Dave Perkal points out that the UBC SHAPE study is about atmosphere and inhalation.<sup>19</sup>

Monona Rossol continues, “Those are not what I'm talking about. What I'm saying is they said there's all kinds of toxicological data – those [Moline and SHAPE] are epi studies. If you were looking for toxicological data and you go to the safety data sheet and you look at the 10 standard tests, you will see that for the eight, nine chemicals that are used for theatrical fog and smoke, there is extremely little data.” (*Transcript page 86, lines 17-22*) Monona Rossol's reference to an epi study was explained earlier by William Jordan: “Epidemiology [l]ooks at two different phenomena and sees whether they appear to happen at the same time. [E]pi studies do not prove causation, they show associations. Sometimes those associations are in fact, real revealing that A causes B - sometimes they don't.” (*Transcript page 40, lines 9-11*)

At this point, our EPA expert William Jordan offered, “I don't know why the safety data sheets failed to identify the studies that have been done on some of these compounds, but the EPA documents very thoroughly keep track of all the different toxicity studies by inhalation route and other routes, to show that these chemicals TEG, PG DPG (glycols) have been extensively tested, and the conclusion of - EPA at least - is that the toxicity profile by the inhalation route is very well understood.” (*Transcript, begins page 86 line 26 to 87 line 3*) Jordan previously stated, “based on the available data the propylene glycol, dipropylene glycol, [and] triethylene glycol pose no toxicological risks, and it's rare in my experience [to

<sup>18</sup> Monona Rossol was asked to provide the references for the sources that she cited, but repeated requests went unanswered

<sup>19</sup> UBC SHAPE Study – University of British Columbia report to SHAPE (Safety and Health in Arts, Production, and Entertainment). Officially titled, *Atmospheric Effects in the Entertainment Industry*, March 27, 2003. The data for this study was also published in the *Journal of Occupational & Environmental Hygiene* in May 2005



see] that EPA didn't even think it was worth spending time to do a risk assessment because it was so obvious to them that it was safe.” (*Transcript page 45*)

One of the main things that was agreed upon by Monona Rossol, William Jordan, and Dr. Esposito, was that we needed to study these fog fluids and pyrotechnic smoke *separately*, and not combine the effects of all of them together (even though some of Monona Rossol’s previous reports rely on data that conflates substances). William Jordan went on to say, “the chemicals and compounds ought to be looked at, individually - and one of the shortcomings of the Moline and British Columbia [SHAPE] Study and NIOSH studies is that they tended to group all of the atmosphere case products in one bucket and not draw distinctions among them. The analysis that I have done indicates to me that at least TEG, PG and DPG are very safe.” (*Transcript page 103*)



Blade Runner (1982), Jordan Cronenweth, ASC



La La Land (2016), Linus Sandgren, ASC



## FALLACY OF COMPOSITION

Despite this, Monona Rossol repeatedly warned about all fog & haze materials being hazardous, even at lower vapor concentrations. Asked about using glycols instead of mineral oils, Monona Rossol replied, “It doesn't matter. They're all nasty. There are no good ones. It's just that the mineral oil is a little bit more of a permanent problem and watch out for film because they also are using polyethylene glycol, which is literally putting the low molecular weight plastic in your lungs. It is not metabolized, and I don't think it's going anywhere. So that's another big, big problem.” (*Transcript, page 18, lines 12-16*).

It is important to note that while polyethylene glycol (PEG) is not a common haze substance we've seen listed on the SDS of atmospheric solutions in our industry<sup>20</sup>, it is an approved substance as per CSATF Safety Bulletin 10 & 10A (*see page 7 of this report*).

Monona went on to mix the vaping industry with the film industry's use of atmospheric effects. She says, “*we're getting data only because of the vaping industry [u]ses the same chemicals*”. (*Transcript page 16, line 2*) However then she highlights materials in the mixture of vape products which are not in use on set: “*[the] FDA proposed last August looking at the vaping chemicals to list [d]iethylene glycol [as] a poisonous chemical*” (*Transcript page 16, line 6*). However, this is a conflation of the safe with the unsafe because we know that diethylene glycol is not listed by CSATF as an approved substance and is not in use on sets.

It's worth noting how rigorously the EPA has worked at their regulations regarding glycols. Former Deputy Director at the EPA William Jordan gives an excellent review of how the agency arrived at safety limits, as the transcript shows. (*Transcript Page 38-44*)



*A.I. Artificial Intelligence* (2001), Janusz Kaminski

<sup>20</sup> <https://asepo.org/resources/Documents/Fog-Haze%20Fluid%20Contents.pdf>

## TEG AND THE NEED FOR AN EPA REGISTRATION #

*“The minute that Grignard has an EPA registration number, I will probably go with it. But right now, no ticket, no laundry” says Monona Rossol. (Transcript page 58)<sup>21</sup>*

During the 2009 H1N1 pandemic, a group at the Harvard School of Public Health completed a study for the FAA which proved TEG was an effective method of sanitizing airline passenger cabins. Although hydrogen-peroxide vapor was also approved, TEG was the preferred material because it was considered safe for humans, had less corrosion risk to avionic electronics, and required lower dosages to be effective.<sup>22</sup>

This is an additional irony regarding the use of atmosphere while a pandemic virus spreads mostly by airborne routes. It turns out that 2 of the 3 safest glycols we use are indeed germicidal. Both propylene glycol and triethylene glycol have been shown to have germicidal properties, with TEG being the more effective substance.

According to the U.S. Environmental Protection Agency (EPA 2005a):

*The Agency has no risk concerns for triethylene glycol with respect to human exposure. Based on a review of the available toxicology data, the Agency has concluded that triethylene glycol is of very low toxicity by the oral, dermal, and inhalation routes of exposure. The toxicology database is adequate to characterize the hazard of triethylene glycol, and no data gaps have been identified. There are no indications of special sensitivity of infants or children resulting from exposure to triethylene glycol.” In addition, TEG has no known deleterious effects on fabrics or other surfaces (Lester, Kaye, Robertson & Dunklin 1950). Unlike HP vapor, TEG vapor is not an oxidizing agent. TEG inactivates viruses and bacteria because it is very hygroscopic; it condenses on bacteria- and virus-containing particles until the TEG concentration becomes sufficiently high to be germicidal (Puck, T.T. 1947a; Puck, T.T. 1947b).*

Recent studies by an independent third-party laboratory show that a very low concentration (a non-visible or light haze) of Grignard Pure, a viricidal air treatment product approved by the EPA, kills more than 98% of airborne Covid-19 virus particles starting in 30 seconds. The active ingredient in Grignard Pure is Triethylene Glycol (TEG).<sup>23</sup>

<sup>21</sup> It is important to note that at the time the panel was convened, Grignard had submitted applications for EPA approval but did not yet have approval for their Pure product.

<sup>22</sup> *Inactivating Influenza Viruses on Surfaces Using Hydrogen Peroxide or Triethylene Glycol at Low Vapor Concentrations* (2009) Rudnick, McDevitt, Firt, Spengler – Harvard School of Public Health.

[https://www.faa.gov/data\\_research/research/med\\_humanfacs/cer/media/InactivatingInfluenzaViruses.pdf](https://www.faa.gov/data_research/research/med_humanfacs/cer/media/InactivatingInfluenzaViruses.pdf)

<sup>23</sup> According to peer reviewed testing conducted by Microchem Laboratory and validated by the EPA during their Section 18 emergency exemption efficacy evaluation of Grignard Pure

## EPA APPROVES FIRST-EVER AIRBORNE GERMICIDAL

In January of 2021, the EPA issued an emergency exemption for the use of a product called Grignard Pure (whose active ingredient is TEG) to help with reducing the spread of Covid-19. Deploying a thin layer of this TEG-derived atmosphere has proven to inactivate 98% of SARS-CoV-2, drastically reducing risk and thereby creating a safer work environment. Yes, the use of atmosphere could actually save lives while remaining safe for use as a lighting effect in areas occupied by humans. Furthermore, the EPA has once again determined the glycols used in Grignard Pure to be safe for consumption by people of all ages, including children and the elderly.

The film industry is a relatively small consumer of atmosphere when compared to the theatrical, live event, and houses of worship markets. The effects of this allowance by the EPA for Grignard Pure to be applied to nearly every public space and be effective even at a small dosage using readily available dispensing machines has enormous implications for all of humanity.

“Today, we are approving the first-ever airborne antiviral product that will help fight the spread of the novel coronavirus that causes COVID-19,” said EPA Administrator Andrew Wheeler. “There is no higher priority for EPA than protecting the health and safety of Americans and I want to thank those—both within EPA and those outside—who have worked to achieve this important milestone.”

<https://www.epa.gov/newsreleases/epa-approves-emergency-exemption-antiviral-air-treatment>



*The Assassination of Jesse James by the Coward Robert Ford (2007), Roger Deakins, ASC, BSC*

## SUMMARY

To date, the experts consulted for this report have seen no scientific evidence that indicates, nor do they have any reason to believe, that atmospheric effects created from the approved list of atmospheric substances increases the airborne transmission of a respiratory virus. In fact, now the EPA is allowing for Grignard Pure to be used as an airborne antiviral product in the fight against Covid-19.

It would stand to reason that cinematographers and special effects technicians should also be permitted to use it to create atmospheric effects.

The EPA has confirmed that the Grignard Pure product can reduce the spread of the coronavirus, and is effective at levels low enough to be considered barely visible. The benefit to filmmakers is that it can also provide the desired atmospheric lighting effects synonymous with cinema.

Using Grignard Pure does require additional training, procedures, and certification – and it must be dispensed with approved haze machines (some of which are already commonplace in the film industry, and more of which are expected to be approved soon), both for on-set atmosphere as well as an air treatment. The EPA has specific guidance on this, and corporations in each state must apply for the EPA exemption via a written request<sup>24</sup>.

In light of the most recent EPA emergency exemption, there seems to be no contradictory science which would prohibit the use of Grignard Pure for use as an atmospheric effect.

It is incumbent that personnel responsible for providing any fog and haze fluid be provided the most recent scientific findings regarding its use, and be restricted to the use of approved materials only. A SDS must be available to personnel.

The safe use of any substance in our industry is regulated by the guidance set forth by the EPA, OSHA, NIOSH and ANSI, who are some of the most stringent regulatory bodies.

Our findings and reviews of past reports cited herein revealed that there has traditionally been a lot of conflation of materials when discussing atmospheric effects – as well as an inherent bias against seeing something visible in the air, even when such substance has been proven to be completely benign. Additionally, in the case of TEG, atmosphere can even be helpful in combating the spread of a respiratory virus.

To rule out synergistic conflation, we must rely on scientific studies that only study one specific material at a time, especially if only one material is being used on set. In the future, we may want to build a database to track the use of fog & haze fluids. In addition, if we employed the widespread use of particle counters, this could help track exposure density on

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<sup>24</sup> From ASEPO: Here are sample letters for the states of [CA](#), [NY](#), [NV](#), and [TX](#).



each show ensuring that productions stay within the safe exposure limits.

The best decisions seem to come from a consensus of experts, and reports that are thoroughly vetted and peer reviewed, so that no bit of advice comes from just one expert. Sharing the science on the matter can only help improve safety and working conditions, specifically in the SARS-CoV-2/Covid-19 pandemic that motivated this report. Finally, this committee is in consensus that better education on the facts surrounding atmosphere is needed at all levels – from studio safety departments, to the technicians using them, to the people in the rooms breathing them in, and everyone in between.



Paul (2011), Lawrence Sher, ASC



Empire of the Sun (1987), Allen Daviau, ASC

## DEFINITIONS & ABBREVIATIONS

- **ACTS** – Arts, Crafts & Theater Safety founded by Monona Rossol, an industrial hygienist who has consulted for IATSE & ICG Local 600 & SAG AFTRA, among other entities.  
<http://www.artsandcraftstheatersafety.org>
- **ACGIH** – American Conference of Governmental Industrial Hygienists. An organization working on occupational health, environmental health and safety. <https://www.acgih.org>
- **AMPTP** – Alliance of Motion Picture and Television Producers. Trade association responsible for negotiating virtually all industry-wide guild and union contracts. <https://www.amptp.org/>
- **ANSI** – American National Standards Institute. An organization that develops voluntary consensus standards in the United States. <https://www.ansi.org/>
- **ASC Future Practices Committee** – The American Society of Cinematographers formed this committee in April of 2020 to study the future of our industry as we face new challenges under SARS-Cov-2. Co-chaired by Amy Vincent, Erik Messerschmidt and Craig Kief, the effort began with over a dozen ASC Cinematographers and 2 Associate Members to explore creative and artistic challenges as well as new technologies. <http://theasc.com/future-practices>
- **CAS #** – Chemical Abstracts Service number that identifies specific chemical(s).
- **CIH** – Certified Industrial Hygienist, rostered at the American Board of Industrial Hygiene. Some Industrial Hygienists are not certified and therefore not listed with the ABIH, nor do they use CIH after their name. Dr. Esposito is a CIH, but also a Doctor of Public Health and would usually use his doctorate title instead of CIH – but he holds both credentials.
- **DGA-SAG-IA-399** – the Directors Guild of America, the Screen Actors Guild (SAG-AFTRA), the International Alliance for Theatrical and Stage Employees, as well as the Teamsters, IA Local 399. Published, The Safe Way Forward guidelines, June 12, 2020.  
[https://www.sagaftra.org/files/sa\\_documents/ProductionSafetyGuidelines\\_June2020EditedP.pdf](https://www.sagaftra.org/files/sa_documents/ProductionSafetyGuidelines_June2020EditedP.pdf)
- **DPG** – Dipropylene Glycol - a mixture of three isomeric chemical compounds, It is a colorless, nearly odorless liquid with a high boiling point and low toxicity. Its low toxicity and solvent properties make it an ideal additive for perfumes and skin and hair care products. It is also a common ingredient in commercial fog fluid, used in entertainment industry fog machines.
- **EG** – Ethylene Glycol – aka mono-ethylene glycol. Not approved for use by NIOSH, OSHA, CSATF. Possibly still used as a fog fluid in some countries, so be careful.

- **Glycerin** – also called glycerol, a trihydric alcohol composed of a chain of three carbon atoms linked by single covalent bonds, with each carbon atom linked to one hydroxyl group and one or more hydrogen atoms.
- **Glycol** – a dihydric alcohol, an organic compound with a molecular structure of two hydroxyl groups.
- **ICG Local 600** – International Society of Cinematographers, IATSE Local 600 - a labor union for Directors of Photography, Camera Operators, Camera Assistants, Still Photographers, Digital Image Technicians and Publicists. <https://www.icg600.com/ABOUT-US/Our-Mission>
- **LD50** – Lethal Dose at 50% concentration. Referred to in some papers and reports, but generally not referenced in safety standards that deal with far lower concentrations.
- **Moline Report** – see Mount Sinai / Environ study, above.  
<https://asepo.wildapricot.org/resources/Documents/Moline%20Report%202000.pdf>
- **Moline Letter** – a July 17, 2015 letter from Dr. Jacqueline Moline, lead author of the Mt. Sinai / Environ Study, specifying that the study was meant as guidance for stage actors and could not be used to set overall safety standards for atmospheric fog & haze in the entertainment and theatrical industries. Dr. Moline urged newer studies as the data was from 1999, and newer products could be in use since then.
- **Mt. Sinai / Environ Study** – aka Moline Report. Health Effects Evaluation of Theatrical Smoke, fog, haze, and Pyrotechnics, June 6, 2000.  
<https://asepo.wildapricot.org/resources/Documents/Moline%20Report%202000.pdf>
- **NFPA Rating** – National Fire Prevention Association hazard rating system refers to, in part, a safety standard outlining a hazard rating system for emergency personnel.
- **N-List** – EPA's list of surface disinfectants with dwell time, etc. It includes bleach, isopropyl alcohol and hydrogen peroxide, amongst others.
- **NIOSH** – National Institute for Occupational Safety and Health – A division of the CDC which is responsible for conducting research and making recommendations for the prevention of workplace injuries and illness. <https://www.cdc.gov/niosh/index.htm>
- **OSHA** – Occupational Safety and Health Administration – A regulatory agency of the US Department of Labor which enforces the limits and regulations they set to ensure worker safety. <https://www.osha.gov>
- **PEL** – Permissible Exposure Limit often expressed as PEL-TWA (Time Weighted Average). For example, the PEL-TWA for DPG dipropylene glycol fog is 100 ppm (600 mg/m<sup>3</sup>). As a reference, most fog / haze used on a film set would register well below the heavy fog of 40 mg/m<sup>3</sup> (CSATF limit).

- **PG** – Propylene Glycol - the first glycol fog fluid innovated by Rosco Labs in 1984, for which they received an Academy Award. It has been used safely for decades and is found in eye drops, personal care products and air sanitizing sprays such as Ozium.
- **PNOR** – Particulates Not Otherwise Regulated (NIOSH & OSHA reference these).
- **Puck & Spengler Report** – Jack Spengler or Theodore Puck, “godfather of microbiology”.
- **STEL** – Short Term Exposure Limit. Maximum exposure level averaged over a short period, generally 15 minutes. Some PEL tables show this as “ST” in parenthesis.
- **TEG** – Triethylene Glycol - (2,2'-(ETHYLENEDIOXY) DIETHANOL), a fog & haze fluid, also studied for its air sanitation properties since the 1940's. EPA approved as an air sanitizer. FAA approved for sanitizing airline cabins. One of the active ingredients in air sanitizers such as Ozium.
- **TLV** – Threshold Limit Value of a chemical substance is a level to which a worker can be exposed day after day for a working lifetime without adverse effects.
- **TWA** – Time Weighted Average - a measure of exposure over a given time period of 8 hours.
- **UBC SHAPE Study** – University of British Columbia report to SHAPE (Safety and Health in Arts, Production, and Entertainment). Officially titled, Atmospheric Effects in the Entertainment Industry, March 27, 2003. The data for this study was also published in the Journal of Occupational & Environmental Hygiene in May 2005. <https://asepo.org/resources/Documents/SHAPE%20Report%202003.pdf>
- **USA 829** – IATSE Local USA 829 of Scenic Artists. In the context of the June 17th meeting, it also refers to an ACTS Report for USA829 on theatrical fog, smoke & haze. The author, Monona Rossol, first published this report Sept 17, 2010 and revised June 8, 2018.
- **WCB** – Workers' Compensation Board of British Columbia which recommended the SHAPE study.



*Inside Llewyn Davis (2013), Bruno Delbonnel, ASC*



**LINKS (JAN 2021)**

Industry Wide Labor Safety Committee

Safety Bulletin #10, guidelines for atmospheric fog & haze

[https://www.csatf.org/safety\\_bulletin\\_10/](https://www.csatf.org/safety_bulletin_10/)

<https://www.csatf.org/production-affairs-safety/safety-bulletins/>

ASEPO Alliance of Special Effects & Pyrotechnics Operators, extensive links:

<https://asepo.wildapricot.org/FogDocs>

ASEPO Response Letter to ICG Local 600 Guidelines

<https://asepo.org/resources/Documents/Local%20600%20Response%20-%20ASEPO.pdf>

ASEPO Table of ingredients for many commonly used fog and haze fluids

<https://asepo.org/resources/Documents/Fog-Haze%20Fluid%20Contents.pdf>

Actors' Equity Theatrical Smoke & Haze Regulations

<https://www.actorsequity.org/resources/Producers/safe-and-sanitary/smoke-and-haze/>

ESTA Fog & Smoke Working Group - Reading List

[https://tsp.esta.org/tsp/working\\_groups/FS/fogdocs.html](https://tsp.esta.org/tsp/working_groups/FS/fogdocs.html)

Arts Crafts Theater Safety, founded by Monona Rossol

<http://www.artscraftstheatersafety.org>

OSHA Chemical Data

<https://www.osha.gov/chemicaldata/>

UBC University of British Columbia – School of Public Health

<https://www.spph.ubc.ca>

NIOSH PNOR Particulates Not Otherwise Regulated

<https://www.cdc.gov/niosh/npg/npgd0480.html>

Inactivating Influenza Viruses using Hydrogen Peroxide or Triethylene Glycol at Low Vapor Concentrations  
(FAA Report by Harvard School of Public Health, 2009):

[https://www.faa.gov/data\\_research/research/med\\_humanfacs/cer/media/InactivatingInfluenzaViruses.pdf](https://www.faa.gov/data_research/research/med_humanfacs/cer/media/InactivatingInfluenzaViruses.pdf)

DHS Airborne SARS-Cov2 Decay Calculator

<https://www.dhs.gov/science-and-technology/sars-airborne-calculator>

DHS Surface SARS-Coc2 Decay Calculator

<https://www.dhs.gov/science-and-technology/sars-calculator>

DHP Dry Hydrogen Peroxide air treatment (Pinewood Studios, Atlanta)

<https://synexis.com/>

EPA Approves Emergency Exemption for Antiviral Air Treatment

<https://www.epa.gov/newsreleases/epa-approves-emergency-exemption-antiviral-air-treatment>

EPA Issues more detailed guidance on how and where Grignard Pure can be used

<https://www.epa.gov/pesticide-registration/section-18-emergency-exemption-requests-and-coronavirus-covid-19>

EPA Exemption documents for Grignard Pure

<https://www.epa.gov/pesticide-registration/epa-decision-documents-emergency-exemption-requests-use-grignard-pure>

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Citizen Kane (1941), Gregg Toland, ASC

## CONTRIBUTORS

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**Transcript of June 17th ASC-FP Zoom Meeting on**  
**Atmospheric Effects**

**Transcribed by <https://otter.ai>**  
**July 15, 2020**

**Audio Clip Part 1**

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Mark Doering-Powell, ASC 0:02  
For one more right - oh, here she is. Let's bring her in.  
I'm gonna go ahead and bring in Rossol  
  
Amy Vincent, ASC 0:08  
Alrighty  
  
Mark Doering-Powell, ASC 0:48  
Waiting for her to join.  
  
Monona Rossol, MS, MFA 0:50  
I'm already here.  
  
Mark Doering-Powell, ASC 0:51  
Oh, hey, how you doing Ms. Rossol?  
  
Monona Rossol, MS, MFA 0:53  
Yeah there's no camera on my ancient computer  
  
Mark Doering-Powell, ASC 0:56  
Oh no problem  
  
Monona Rossol, MS, MFA 0:59  
Which is probably a good thing for everybody.  
  
Mark Doering-Powell, ASC 1:01

1 Well, welcome. Thanks for thanks for lending your expertise to this meeting of ours its terrific to have you here.

3 Monona Rossol, MS, MFA 1:09

4 Want me to open up the PowerPoint now.

6 Mark Doering-Powell, ASC 1:12

7 We're just going to do some introductions here and just say we'd love to admit a bunch of guests. And Dave, how do  
8 you think it's best to proceed? How do you know how long your PowerPoint is?

10 Dave Perkal, ASC 1:29

11 Ms. Rossol, do you know how long your PowerPoint is?

13 Monona Rossol, MS, MFA 1:32

14 Oh. Well, it sort of depends on how you want it to be. I can skip over stuff or I can spend the time I think, is  
15 probably about... 25 minutes, something like that, 20 minutes.

17 Dave Perkal, ASC 1:48

18 So we would like as everybody has a short presentation, so we were hoping that everybody would keep their their  
19 PowerPoints between seven and 10 minutes. And we really want to just focus on the use of theatrical atmosphere.  
20 Within this committee, not labor related issues of COVID and safety and going back to work in general. So is there a  
21 way to maybe pare that down ?

23 Monona Rossol, MS, MFA 2:09

24 Well maybe we can, but I want you... because there are some really complex issues between the fog and and the  
25 COVID.

27 Dave Perkal, ASC 2:21

28 Right. I just want you to know that this isn't a labor union. This is an artistic Honor Society.

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Monona Rossol, MS, MFA 2:26

I know, and I'm not treating it like a labor issue at all.

Dave Perkal, ASC 2:30

Ok

Monona Rossol, MS, MFA 2:30

Like a scientific issue.

Dave Perkal, ASC 2:32

Right, right. So um , yeah, if there's any way that you can narrow down that focus, just so that...

Monona Rossol, MS, MFA 2:38

I'll slide over some stuff.

Dave Perkal, ASC 2:40

I appreciate that. Thank you.

Monona Rossol, MS, MFA 2:46

And then I think you'll find it's pretty interesting. \*\*\* FIX ? \*\*\*

Dave Perkal, ASC 2:49

Because we've done it all week. We're reading all the articles. It's fascinating. Is there um, are we waiting for  
Grishma ?

Grishma Desai, ASQ, PMI 2:57

I'm here.

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Dave Perkal, ASC 2:59

oh you are.

Grishma Desai, ASQ, PMI 3:00

Yes.

Mark Doering-Powell, ASC 3:00

I think we have all our guests, our panel guests, I think we just want to wait till the proper 2:15 to start the meeting with the people that are waiting in the in the in the waiting room. I don't know what do you think?

Dave Perkal, ASC 3:13

Yeah, we do you guys, any of the panelists you guys have any questions before we start?

Etienne Grignard - Managing Director 3:23

I'm good.

Bill L. Jordon - EPA 3:23

Me too.

Larry Sher ASC 3:34

I have um I have... just a question... (garbled)

Amy Vincent, ASC 3:37

Go ahead, Larry.

Larry Sher ASC 3:38

1 No, I was just I mean, they probably are up to speed Dave - maybe you've got them up to speed in terms of just from  
2 an artistic perspective, do they have some the all the panels have some understanding of how we use atmosphere and  
3 smoke in our work you may have seen before and all that but in the history of cinema and lighting and stuff like that,  
4 to understand why This is an issue for, for the ASC and for photographers in general but also respecting the health  
5 concerns. I just that it's a it's something we use quite frequently to help tell the stories that we tell.

6  
7 Dave Perkal, ASC 4:16

8 I think Mark and I expressed that to a number of the panelists. I don't know if anybody has another question, but that  
9 I think they Ms. Rossol we didn't we weren't able to speak with you on the phone before the panel. But you  
10 understand that you're you're involved in this industry, right.

11  
12 Monona Rossol, MS, MFA 4:34

13 Like 80 years.

14  
15 Dave Perkal, ASC 4:35

16 Yeah. Okay. Okay, great.

17  
18 Monona Rossol, MS, MFA 4:38

19 I had my first union card when I was three.

20  
21 Dave Perkal, ASC 4:42

22 Okay, Perfect. Mark. You want to start letting people in?

23  
24 Mark Doering-Powell, ASC 4:48

25 Yeah, let's bring him in. Um, we got Dana Gonzalez. And he's coming in Lauren Yachenelli, Matty Libatique

26  
27 Let's give them a chance to join.

28 And Dave, are you going to take it away from here?



1  
2 Dave Perkal, ASC 5:10  
3 Yeah, I will, so to speak. Once everybody's in.  
4  
5 Rodney Taylor, ASC 5:22  
6 How you doing?  
7  
8 Dave Perkal, ASC 5:25  
9 Hey, guys.  
10  
11 Erik Messerschmidt, ASC 5:27  
12 Rodney, how are you?  
13  
14 Rodney Taylor, ASC 5:29  
15 Good. How are you?  
16  
17 Erik Messerschmidt, ASC 5:30  
18 Good.  
19  
20 Rodney Taylor, ASC 5:32  
21 Thank you guys.  
22  
23 Dave Perkal, ASC 5:35  
24 Thanks for joining us. Just for my clarification who's "JustFX" ?  
25  
26 Justin Kraus, ASEPO 5:39  
27 Oh, sorry. That's me Justin Krauss.  
28

1 Dave Perkal, ASC 5:43

2 Okay, thanks, Justin. Okay, should we wait a little bit longer so we get going?

4 Erik Messerschmidt, ASC 5:51

5 I think we can start Dave.

7 Dave Perkal, ASC 5:53

8 Okay. So, I want to welcome everybody to the future practices committee at the ASC today. We've convened an  
9 esteemed panel of experts and they on the history of the chemical makeup and the safety of the past, present and  
10 future use of atmospheric products used for us as a tool for cinematography. So the the intent of the panel is to is the  
11 fact finding mission to help us better understand the new COVID era how we as cinematographers can maintain  
12 artistic integrity and intent while keeping a safe work environment. We're not here to implement new standards or  
13 regulations, nor do we have the power to do so our role is an exculpatory exploration committee to further discuss  
14 and advise. So the way the panel is going to work is each panelist has a short presentation, after which the  
15 moderators, Mark and I will ask questions about their presentations. And after all the panelists have presented the  
16 forum will be open to questions from the audience and we ask that you use the raise your hand feature for those of  
17 you who are unfamiliar. If you go to the participants at the bottom window, you click on that And you'll see a list of  
18 participants and below that you'll see a raise hand button. If somebody asked your question while you're in queue,  
19 you can always lower your hand. Alright, so let me introduce the panelists. So we have Monona Rossol, MS, MFA,  
20 Ms MFA and CIH. Ah, if I get any of these titles wrong, let me know.

22 Monona Rossol, MS, MFA 7:20

23 You got that one wrong.

25 Dave Perkal, ASC 7:22

26 Which one?

28 Monona Rossol, MS, MFA 7:24

1 I'm not a CIH I'm an Industrial Hygienist.

3 Dave Perkal, ASC 7:27

4 Okay. Sorry,

6 Monona Rossol, MS, MFA 7:28

7 Member of the American Industrial Hygiene Association.

9 Dave Perkal, ASC 7:31

10 Okay, my my, my apologies.

12 Ms Rossol has also consulted... has been a consultant for SAG and worked on "The Safe Way Forward" document  
13 which is the IA, SAG and DGA and Teamster document to help us move forward in this age of COVID, which I  
14 think a lot of us have already read. We have William Jordan, who is a deputy director for Programs, Office of  
15 Pesticide Programs for 40 years at the EPA. We have Dr. William Esposito, CIH, Doctor of Public Health from  
16 Columbia University in New York, and is on the American Board of Industrial Hygiene. We have Grishma Desai,  
17 ASQPMI, she's the lead Chemists and Quality Compliance Manager at Grignard, and we have Etienne Grignard -  
18 Managing Director - he's the Managing Director and Principal at the Grignard company. So, Ms Rossol, I think we  
19 want to start with you - and like we discussed before, if you could just give us a really brief overview of ... well, let  
20 me ask you first, if you could tell, explain your involvement with the "Way Forward" document.

22 Monona Rossol, MS, MFA 8:40

23 I was both the Consultant for SAG AFTRA and also the expert for USA 829 IATSE. So I've been with that Union  
24 for like 25 years now. So I worked I worked from both sides of... this has been what I do. You know, since I was a  
25 child, I also have a... I'm also now on the American Conference of Governmental Industrial Hygienists, committee  
26 on industrial ventilation, and a member of ASHRAE. And I have been on the planning of ventilation for over 80  
27 buildings. So I'm very concerned also about the ventilation aspect having to do with COVID and fog, because  
28 theater ventilation should also be modified in some instances to deal with atmospheric special effects.

1  
2 Dave Perkal, ASC 9:35

3 Sure, and we're going to get into that in just a second. And then I just want to circle back to the "Way Forward"  
4 document. Can you tell me how you guys, there's a lot of panelists, there's some from the IA some from the  
5 Teamsters and some from the DGA, there's a lot of people listed on that. Was there a consensus on that?

6  
7 Monona Rossol, MS, MFA 9:51

8 [Laughter] They're show-people, what do you think?

9  
10 Understand everybody working everybody eventually came on, you know, together, but you know how it is it  
11 people, we had maybe a couple of experts there that shouldn't have been there first and then they then they changed  
12 and they got different experts and so on. It was there's always difficulties with with with documents like that, but it  
13 all works out in the end. It's a pretty good document.

14  
15 Dave Perkal, ASC 10:19

16 Yeah. So that's what I mean. I mean, in the end, we all everybody that was on that panel decided, this is a great draft.  
17 This is what we can all agree on. We're gona...

18  
19 Monona Rossol, MS, MFA 10:27

20 Well yeah and every one of us would change a line here line there or, you know, throw a paragraph out or whatever.  
21 So I mean, there's nobody's totally happy, nobody totally unhappy. So it all works out. That's about the best to get.

22  
23 Dave Perkal, ASC 10:40

24 Right. But you agree with everything that's in that document, right? That's that's basically my question.

25  
26 Monona Rossol, MS, MFA 10:45

27 Well, yeah, within limits. Yeah.

1 Dave Perkal, ASC 10:46

2 Yeah. Okay. Um, so I know you have a presentation and I know that that we've explained to you that we're primarily  
3 interested in the artistic aspect as it relates to cinematography and we're not a labor union, and we're not here to set  
4 policy. So we really want to just kind of focus on that. And I know we gave you like a little last minute warning that  
5 we were pressed for time and everybody here but if you can, maybe just either before or if it's contained within your  
6 presentation, if you can just start with the history of the use of atmosphere in the industry, and where it's come from,  
7 and really just kind of stick to the pertinent where it is now relevant facts that you know about that if it's contained  
8 within your presentation, you can start your PowerPoint.

9  
10 Monona Rossol, MS, MFA 11:30

11 Well, well... the real the real issue is that they this the standards for fog were set really incorrectly. I mean, we...  
12 there's there's no data behind them. They're using what is called the particulate standards of OSHA for those, but we  
13 really don't know - when you see the presentation, you'll see how actually little has been done in terms of toxicity of  
14 those eight actually nine chemicals depending on whether you're in theater or you're in, uh film, because there's a  
15 slightly different list for the two. So the the toxicity issues are that we don't really know how toxic they are. There  
16 certainly is a lot of anecdotal stuff. I've done a lot of expert witness with people in claiming injury including a death.  
17 So I mean, these are always problems that we should be erring on the side of caution, because it is not you can't say  
18 they're safe, because there really is not enough data to do that. Yeah, the real issue is in the United States chemicals  
19 are innocent till proven guilty.

20  
21 Dave Perkal, ASC 12:47

22 Right. So...

23  
24 Monona Rossol, MS, MFA 12:48

25 Countries have to prove it.

26  
27 Dave Perkal, ASC 12:50

1 Right. Exactly. So so I don't mean to interrupt you, but um, I've read I've read both the USA 829 reports that fit in  
2 2015 2016 18 and 19 and have read the SHAPE UBC Reports. And it does seem like there was some science that  
3 was reported there a data that was used there. So

4  
5 Monona Rossol, MS, MFA 13:14

6 Yeah... (garbled). I know Dr. Moline and I got her to write a letter saying that her standards should not have been  
7 used for national setting national national standards, that they were really limited to the productions that she was  
8 studying at the time. There's been a number of mismanagement steps, you have to realize that the first studies that I  
9 was participating in we're in the 80s and I actually did with NIOSH, a short study of a different fog effect when we  
10 used to use ammonium chloride back in 83. I did the air sampling for that. So I've been around the air sampling and  
11 the data collection and NIOSH and all I have all those studies, all the way back.

12  
13 Dave Perkal, ASC 14:01

14 Oh, that's great, and we appreciate that. I'm wondering if we can maybe just jump into your PowerPoint and if we  
15 could just focus it like, on the what's relevant to the Way Forward document and maybe your last?

16  
17 Monona Rossol, MS, MFA 14:14

18 Well yeah, you'll you'll see what I'm doing. And then if it doesn't work for you, I'll quit and you'll do something else.

19  
20 Dave Perkal, ASC 14:22

21 No, we don't want you to quit. We know what we can do.

22  
23 Monona Rossol, MS, MFA 14:26

24 I can't change the slides, I've already selected. So, we're stuck with that. If it doesn't work for you. That's, you know,  
25 you know, I'm not looking for work. So it's just not.

26  
27 Dave Perkal, ASC 14:39

1 And I appreciate you being here and we're having an immense amount of gratitude. You spent your afternoon with  
2 us. So then if it would be okay, if you would start your PowerPoint, and if I have any questions, or if I need to pivot  
3 to somebody else, that'd be okay with you.

4  
5 Monona Rossol, MS, MFA 14:53

6 It's fine with me.

7  
8 Dave Perkal, ASC 14:54

9 Okay, so one all right, why don't we

10  
11 Monona Rossol, MS, MFA 14:57

12 Okay, let's insult everybody here.

13  
14 Dave Perkal, ASC 15:00

15 Okay Great.

16  
17 Monona Rossol, MS, MFA 15:04

18 Alrighty, home slide show.

19 From current slide, everybody see it?

20  
21 Dave Perkal, ASC 15:14

22 Yeah.

23  
24 Monona Rossol, MS, MFA 15:15

25 Okay, then we are on. And we are the only industry that pollutes it's own air. I always make the point because I  
26 teach this every year 10, 15, 20 times. So it a lot of these things are better are, I'm used to saying, but one of the  
27 points I make is when you walk in and you see this kind of thing, you know that it's everywhere, because if you  
28 believe that all of the haze can stay on the stage, you would also have to believe you can assign a section of a



1 swimming pool for peeing. So what we do is we have everybody exposed because we have to have a balance in  
2 order to keep those levels on in one place.

3  
4 Dave Perkal, ASC 15:56

5 If I could just ask you one quick question. You use the word that we've been pollute our air is that is that

6  
7 Monona Rossol, MS, MFA 16:02

8 yeah, there's no and there's nothing good about inhaling any of it. You know, I mean, this isn't good.

9  
10 Dave Perkal, ASC 16:08

11 I just, I just want to get your perspective. Thank you.

12  
13 Monona Rossol, MS, MFA 16:10

14 Oh, yeah, yes.

15  
16 Dave Perkal, ASC 16:13

17 Go ahead, continue. Thanks.

18  
19 Monona Rossol, MS, MFA 16:14

20 Not good. It's a respiratory, respiratory irritant?

21  
22 Dave Perkal, ASC 16:17

23 Sure,

24  
25 Monona Rossol, MS, MFA 16:18

26 at minimum. So here's the we talked about the eight chemicals used in theater plus one additional one in film.

27 There's no other of the six. Six of the chemicals have no acute respiratory data. So we don't even know what they do.

28 None of them are tested for respiratory sensitization when they talk about asthma, that's just an anecdotal, because

1 there is a nice test in us for safety data sheets that you're supposed to do eventually, for chemicals never been done.  
2 Only six of the possible 56 chronic tests were done. So we don't know it's it's it's it's crapshoot. So here's here's this  
3 is the safety data sheet from propylene glycol. One of the chemicals we know the most about this is the section 11  
4 from Sigma Aldridge. That's what we always do to look at what is the actual data collection, the real data, not the  
5 crazy stuff that we see people talking about. But these are the bottom line. So wait, there's a little very little that we  
6 know about these chemicals. And if you look at mineral oil, we know that by ingestion, it you get the Aztec to step  
7 because it's a hell of a laxative. But if you inhale it, you can get lymphoid pneumonia and I trained firefighters up at  
8 their at Mountain falls center Academy and at the Rochester Institute of Technology, and they did a training with an  
9 oil cracker, and one of them. Look, three of them were got lymphoid pneumonia and one of them was in the hospital  
10 fighting for his life for a week.

11  
12 Dave Perkal, ASC 18:08

13 So why are they still using oil? I'm just curious because  
14

15 Monona Rossol, MS, MFA 18:11

16 well, it lasts the longest.  
17

18 Dave Perkal, ASC 18:13

19 Maybe we've given that up a long time ago in our business, once you see our guys use it  
20

21 Monona Rossol, MS, MFA 18:18

22 Yeah, well, well SAG won't let you put it won't let you use it. But in sure is used a lot in theater.  
23

24 Dave Perkal, ASC 18:26

25 Okay.  
26

27 Monona Rossol, MS, MFA 18:28  
28

1 So now there's new data, we're finally, finally, finally, getting data. And we're getting data only because of the  
2 vaping industry that uses the same chemicals. So now FDA is looking at those same chemicals. And they don't seem  
3 to get the fact that there are all these deaths also from from vaping because they stopped counting and notice in  
4 February, they stopped counting because COVID showed up. So we haven't got a current code. But if you are a  
5 vapor I always say, you know, thank you for your service because we're getting a lot of good data from the papers.  
6 And FDA proposed in in last August already looking at the vaping chemicals to list propylene glycol as a respiratory  
7 toxic and diethylene glycol is a poisonous chemical, glycerin is a respiratory tox toxicant in and there is a chemical  
8 called glycidal that comes from when you heat glycerin. And that's listed as a carcinogen because those are all in the  
9 vaping of smoke. Okay, so at least getting some data.

10  
11 Dave Perkal, ASC 19:43

12 One quick question about the propylene glycol. Is that a proposal that some people are making with the FDA or have  
13 they already decided to make that statement because in the 829 both 829 on the shape document, it said propylene  
14 glycol was showed no adverse effects from inhalation.

15  
16 Monona Rossol, MS, MFA 20:02

17 because that they're going after they're looking at the wrong sources and they're doing it quite deliberately they are  
18 selling it. And they want to they want to use it, they are not looking at the real data. They never have and they never  
19 will. It is, don't you know, if you ask this, I mean, if, if you believe the people who are manufacturing the fog, you  
20 know, because I'm on the ANSI, I mean, the E1 committees, you know, I was a voter, I'm on as observer now,  
21 because they don't have the time. Most of those are fog users or manufacturers. Oh, if you believe what they're  
22 saying, there's a car I want to talk to you about before we leave this forum.

23  
24 Dave Perkal, ASC 20:47

25 So you real That's funny. So um, I have a just another quick question. So the propylene glycol and the way that I  
26 acquire that information that it was a respiratory Problem with respiratory and from the test was from your 829  
27 documents. Are they? Is there new information out besides the 829 that were published?

1 Monona Rossol, MS, MFA 21:08

2 Yeah, this was the first new information we've had because nobody is chemical. But FDA is now looking at them  
3 because they are vaping chemicals. So they've studied them for decades. For decades, no one has looked at the  
4 toxicity of these chemicals. No one wants to.

5  
6 Dave Perkal, ASC 21:26

7 Right Ok.  
8

9 Monona Rossol, MS, MFA 21:27

10 You don't know you can call them non toxic.  
11

12 Dave Perkal, ASC 21:29

13 Right.  
14

15 Monona Rossol, MS, MFA 21:30

16 So, what about kids? I'm going to warn you about this because if you don't know about this, you really should know.  
17 The film industry had the bullet in 3033. That simply said producers should take steps to prevent exposure of the  
18 infant which they define defined as 15 days to six months of age. After that, after six months technically adult limits  
19 for fog apply. Nothing could be more ridiculous. So What we did with these two people, and I've worked with Dr.  
20 Geller before 15 years ago, we did a project. So I mean, I've known him a long time. And we went to the Georgia  
21 OSHA because they're, you know, the third largest film producer. And we've made a proposal, and we got on the  
22 conference call, and we now have the first OSHA regulation for children and fog and ages zero to two, no exposure,  
23 two to 9, 30 minutes, nine to 16, 60 and so on, and you have to monitor, you have no choice as a child there. You  
24 got a particle counter in your hand.

25  
26 Dave Perkal, ASC 22:43

27 What one quick one quick question. Sorry to interrupt again. I just I just want to clarify, you know, because we said  
28 that there's some stage Broadway productions are still using mineral oil for effects. We've gotten rid of it in the

1 motion picture business. Does does this first new OSHA rule for actors. Is that for kids on movie sets or is it kids on  
2 Broadway? Is it a mixture of oil?

3  
4 Monona Rossol, MS, MFA 23:06

5 Well, if you have a professional child and you have a special effect in the air, this this rule applies.

6  
7 Dave Perkal, ASC 23:13

8 Okay? So that's that's any sort of atmospheres that have special effects because I know that the Broadway shows  
9 they use for their explosions when they do something they use the mineral oil they'll use for that. But for the just a  
10 haze, we'll use like a glycol for that

11  
12 Monona Rossol, MS, MFA 23:27

13 It doesn't matter. They're all nasty. There's no no good ones. It's just that the mineral oil is a little bit more of a  
14 permanent problem and watch out for film because they also are using polyethylene glycol, which is literally putting  
15 the low molecular weight plastic in your lungs. It is not metabolized, and I don't think it's going anywhere. So that's  
16 another big big problem.

17  
18 Dave Perkal, ASC 23:49

19 And one quick one quick follow up. Is there a Is there a maximum level like a parts per million for each of those  
20 weighted averages for the 30 minutes? 60 minutes?

21  
22 Monona Rossol, MS, MFA 23:57

23 Yeah, they weight because when we when we looked at at reducing, they have the level in order to meet the EPA  
24 safety regulations for children, the levels would have been so low, they wouldn't have shown on camera.

25 You couldn't have seen them.

26  
27 Dave Perkal, ASC 24:16

28 get a number for that level just so that we can reference this thing.

1  
2 Monona Rossol, MS, MFA 24:19

3 Oh, we could I could, I could calculate that for you. I have it somewhere in my notes. But the point was, what we  
4 did instead was to reduce by the same safety factor the time at which they would be exposed to that limit. And that's  
5 the way we did it

6  
7 Dave Perkal, ASC 24:38

8 The TLV right?

9  
10 Monona Rossol, MS, MFA 24:41

11 Well, that that would TLV would be technically ACGIH, so this is the the level at which ANSI or the standard here  
12 that the permissible exposure limit, I guess you would say because this is the Georgia OSHA

13  
14 Dave Perkal, ASC 24:57

15 Okay,

16  
17 Monona Rossol, MS, MFA 24:57

18 the PEL

19  
20 Dave Perkal, ASC 24:59

21 Okay,

22  
23 Monona Rossol, MS, MFA 25:00

24 So, so all of the all of these things change now with masks, distancing, ventilation, disinfecting, and testing that have  
25 to be in every program. Now this is we open. So we're going to look first at mat masks, they have two purposes. One  
26 is that we should be wearing them for protection of each other, if you can, and certainly obviously an actor can't.  
27 And the crew members may wear them for protection from special effects. So those are the two things and these are  
28 the different types. The most common is the dust mask that we usually think of as the N95. Although there are a

bunch of different filter levels that that could be, and this is the one we think should be for nurses. It was used during Ebola and it should have been used here too, but this country got caught with his pants around it's ankles. these are pictures of the quarter and half mask, they also have the exhalation off, which means your breath is coming right out, unfiltered into the air. So these are these help you breathe out. And then when you breathe in, the valve closes and forces the air through the mask. So, these make breathing easier, but they're not for COVID. These are other masks that are sometimes used. And you should all really understand this this little graph here and means not resistant to oil. R means resistant to oil, and P is for p for oil proof. So this is the line of respirators that are the best obviously, the 95 means 5% of the particles that point three microns that are used in the test go through that respirator 99 1% go through 100 or HEPAs. That's 99.97% Better get captured. So obviously the P100 is the best, the N95 is the bottom of the line. So people are talking about the N95 like it's the second coming of Christ but you know it is really down there on that list that not resistant to oil tells you if anyone's using an oil cracker for any reason. The respirators are non-functioning within minutes. So that is also a factor in in in our business. Oil mist, we'll call because we gotta save time here. Everybody really I'm hoping understands the difference between inhalable respire, respirable and nanoparticles. If that's not part of your thinking and your training. You're lost on this whole discussion. And it's crucial. That's why we do training of workers in hazard communication because this kind of subject is part of it and gases and vapors are molecules. So they go through any filter of any mask. And if we look at a picture of these are just the respirable ones. That means those are the ones that can make it all the way down into your alveoli, plunk, where there's no clearance mechanism. And here's your Coronavirus down here, here's your nanoparticles and so on. So, understand that these are the the relative sizes of what we're dealing with here. All serious respirators must be NIOSH approved. We teach people to look for the NIOSH numbers, there's a list EPA has of all kinds of them that are phony, and boy Are they out there. So we need to understand what certification is and how to get the right ones. This is fit testing. If they are if anybody is using respirators on the in the theater or in the on the film location that employer is supposed to have a respiratory protection program and someone to administer it, someone to do medical certification or hospital to send them to. And this is fit testing which is also required. Here's fit testing for a higher Protection Factor. And you can't have people with beards because that is going to just absolutely yes I noticed you. We have some bearded people here so you none of you are going to be wearing respirators the way it is.

And I see a five o'clock shadow I think on the other one, that's all. Okay.



1 And and this is what we see on when we watch the television too, so people aren't getting this and this guy is  
2 spewing his stuff out. So there aren't enough N95 so what do we wear? Whatever the hell you find. And so we use  
3 are using the surgical masks if you're now very plentiful or the Do It Yourself cloth masks and the protection they  
4 actually provide us when we were limited and unknown. Okay, but they work. And they work because the cloth  
5 stops some of the large droplets not much from other people, but for you just ever. Go ahead.

6  
7 Dave Perkal, ASC 30:16

8 So sorry to interrupt you, but I just want to really want to get back on track with just the atmosphere. Which of the  
9 masks would you recommend for using atmosphere on set?

10  
11 Monona Rossol, MS, MFA 30:25

12 I would go listen, I have NIOSH approved respirators.

13  
14 Dave Perkal, ASC 30:29

15 Okay.

16  
17 Monona Rossol, MS, MFA 30:30

18 If available. I mean, that's the problem. So we have to talk about these and that's why the program that we we  
19 worked out for, for moving ahead also talks about these masks. Yeah, they at this point, have no choice but you need  
20 to know that they are not protecting you. They are lowering the amount of droplets that would be out in the  
21 workplace, so that there is less exposure to everyone. When one person is infected, and not wearing a mask,  
22 everyone wearing a mask or not, is now at risk?

23  
24 Dave Perkal, ASC 31:08

25 Well, I guess my point is, is I just wanted to kind of bring the conversation back to just atmosphere because I feel  
26 like we're getting involved in COVID in general and how to prevent it. We have there's other other groups within the  
27 labor unions that are dealing with that. And we're just kind of looking at the the use of atmosphere as  
28 cinematographers have used it as a creative tool. And...

1  
2 Monona Rossol, MS, MFA 31:30

3 we'll get we'll get there in a minute. But there is a couple of things that you need to know. And and one is, this is the  
4 picture of the sneeze and what happens. These are the masks that don't work. Watch out for this because this is one  
5 of the big battles in setting up that program is there was an expert who said, Well, we don't have to wear masks at  
6 all. We can wear shields. I mean, it seems to me absolutely insane, but that's what the person said. And we finally  
7 got it out. Because obviously, that doesn't work. Here if we've got the sneeze imagine sneezing behind the bloody  
8 shield. So what I did was I got a cartoon so that I can make it clear to the people that I trained that when you're  
9 wearing a shield, and you sneeze, everybody on the sides of you is getting it.

10  
11 Dave Perkal, ASC 32:23

12 Right. Once again, we totally appreciate that and I think there's a time and a place for that. We just want to really  
13 focus on just the atmosphere and the fog and haze, if we could just circle back to that. It's coming there. Okay,

14  
15 Monona Rossol, MS, MFA 32:38

16 sorry, cause we wait, what it What's one size particle is the fog

17  
18 Dave Perkal, ASC 32:46

19 that's why that's why we brought this panel together.

20  
21 Monona Rossol, MS, MFA 32:50

22 That's why we're going

23  
24 Dave Perkal, ASC 32:51

25 yeah, okay, great. Okay.

26  
27 Monona Rossol, MS, MFA 32:52

1 So when we start out with the with the with the large droplets that come out of our mouth when we talk when we  
2 sing, when we sneeze, When we cough, they have water. When the water dries, we get down to an aerosol. That's  
3 point one micron, the fog particles are in the range of one micron, in the most part. In fact, they brag about them  
4 being one micron fogs very often. So we're in the same range. So this is the problem, um, what's in the air? And then  
5 we have to look at the ventilation. Where do these where the particles like this, whether they're fog or whether they  
6 are COVID? Where do they go? We have to have ventilation and in terms of air cleaning devices and ASHRAE  
7 systems, that's American heating

8  
9 American Society of Heating, Refrigerating and air conditioning engineers, that doesn't really do a good job air filter  
10 in most of these is for crumbs, flies and boulders. So this stuff comes right back out. Portable, air cleaners do not  
11 work. You cannot control any of that with those. This is this is a new UV system it, in your dreams, totally in your  
12 dreams, not happening. And we teach people that if you're going to use a disinfectant, you got to see that number,  
13 the EPA number and how to look it up and so on because there's people selling you things out there That don't work.  
14 Okay. We're getting there. I know.

15  
16 Dave Perkal, ASC 34:28

17 So so if I could just ask you a quick question, because we're talking a lot about particle size. And we're talking about  
18 what mask could stop a particular particle. And maybe there's a mask that can stop the inhalation of atmosphere,  
19 maybe there isn't a mask that can stop the inhalation of atmosphere. Do you have any other Do you have a study that  
20 points to COVID attaching itself to the atmosphere and using that?

21  
22 Monona Rossol, MS, MFA 34:51

23 Yes, there's, two of them.

24  
25 Dave Perkal, ASC 34:52

26 Okay, if we could, if we could get to that that would be really helpful. Okay,

27  
28 Thank you. I appreciate you. \*\*\*

1  
2 Unknown Speaker 35:04

3 sticking up for us.  
4

5 Monona Rossol, MS, MFA 35:07

6 Yeah, the dry ice machines. See that here? Yeah, I think you're, I think you're gonna be sorry, in a way, I hope  
7 somebody will have a chance to talk to me and I'll show you the whole PowerPoint. Because I think there's things  
8 that you really should know about ventilation systems in general. And what happens when you put a machine  
9 because this machine will take the whole thing of the whole venue and put it out of compliance with the ASHRAE  
10 standard dryice and, and so on, will so we're going to be doing tests for co2 to confirm ventilation efficiency. So  
11 that's going to be an issue with with the with the co2 in particular, but there's just there's so so much um.. so here So  
12 this is really this is the bottom line, and this is the end of the presentation here. When what you have to do if you're  
13 going to do this kind of work, you have to have a lot of experts with you. You need a lot of people who understand  
14 the the business, because they're the people who know where people have to stand, what kind of equipment they're  
15 using, or what the what the fog is, but there are and you asked about information about the fog  
16 attaching to particles. And there are two Chinese studies that show that it rides on air pollution, particles. So these  
17 are just particles in the air, same kind of thing. There's no reason to assume that it isn't going to happen the same  
18 way. But you need the experts you need cooperating unions you need to keep up on the research and you need to put  
19 away to rewrite this isn't Not in stone, this will change. As everything happens as new tests come out. Sooner or  
20 later we have to be doing daily testing. There's just no other way around it. And when new products come out that  
21 make things safer, we should we should be doing that. And what,

22  
23 Dave Perkal, ASC 37:20

24 what, I appreciate that and I've read the safe way for and I appreciate all everybody's effort and coming together and,  
25 you know, really kind of just putting a flag in the sand just as a starting point. And we all recognize it's going to  
26 change because it's a fluid environment that we're in right now. I have a question.  
27  
28

1 In the in the email that you sent Mark and I as we were kind of just doing an exchange of discovery of information.  
2 You had mentioned something I found interesting you said on I think it was June 11. You said SAG and AFTRA  
3 after a field reps or applying the NC one standards to the US atmosphere. Which were developed for theater. And  
4 this means no fog without somebody holding a particle counter and then does a two part question sorry. And then in  
5 the in the way forward document on section 12. It says the HSS shall be provided with the resources and staffing  
6 necessary to oversee to provide directly adequate daily attention to the use of foggers and atmosphere. So you're  
7 saying that there's some qualifying determinant that will allow the use of fog and atmosphere and haze as long as the  
8 HSS has a way to monitor is that correct?

9  
10 Monona Rossol, MS, MFA 38:35

11 Well, you know, remember what I said at the beginning, we didn't all get what we wanted. So we as much as we  
12 could and I'm not unhappy with with the program but I certainly think that that especially in film, I see absolutely no  
13 reason to be using fog and smoke right now. I mean, you all you have to do is to pay for the computer guy to do a  
14 better job of it.

15  
16 Dave Perkal, ASC 39:02

17 The computer guy?

18  
19 Monona Rossol, MS, MFA 39:03

20 Yeah.

21  
22 Dave Perkal, ASC 39:04

23 Okay. So um, but but, but what I found interesting about it is because you're you were hired as the consultant for  
24 SAG in that instance, and you represented them in the way forward document. And this is actually like a, the only  
25 thing that I could find in that document that pertained to atmosphere. And it was, it was it was consistent with what  
26 you have written on your email that maybe somebody in a modern HSS should monitor it. You said in the email,  
27 somebody should monitor it. So there is it seems to me that there is, you know, an agreed upon if you're using a way  
28

1 forward and what you've said as a consultant for SAG that there's going to be a way to use atmosphere as long as it's  
2 done within certain parameters. Is that correct?

3  
4 Monona Rossol, MS, MFA 39:47

5 Well, you wait, we that you certainly can with a particle counter. Remember, each of the unions also has the right to  
6 do what they what they want. already agreed is going to be the way things up. Not all of the unions see fog the same  
7 way.

8  
9 Dave Perkal, ASC 40:06

10 Right. Right. And one of the benefits of being in a labor union rather than being in SAG, which is what you  
11 represented is, is that we can wear a mask and the actress can't. So there I would think, and I'm not a doctor, or HIC,  
12 or CIH, I'm sorry, but I would think that they'd have more exposure than somebody that would, you know, have the  
13 opportunity to wear a mask.

14  
15 Monona Rossol, MS, MFA 40:26

16 Yeah, and in most of the remember, while I'm with SAG and AFTRA I've been with 829 for 25 years. So I'm and I  
17 had as much input for them, as I did with SAG, I mean, and I'm not the only expert listed there. So that's what I said  
18 it's a battle and we got the best we could, and there is a vague statement there about atmosphere we didn't say no,  
19 absolutely not ever. But you know, it's you can you can see how vague it is. So If SAG says no, we want a particle  
20 counter, and we wanted this, and we want that it's gonna happen.

21  
22 Dave Perkal, ASC 41:06

23 Right? So I appreciate you providing some clarity on that. Because I think a lot of people were asking the same  
24 questions and it was really helpful for you to do that. If um, if I could move to some of the other people to do their  
25 presentation, then I could circle back with you. And then we can all have a discussion, but that'd be okay with you.

26  
27 Monona Rossol, MS, MFA 41:23

28 Sure.

1  
2 Dave Perkal, ASC 41:24

3 Okay, great. So I'm going to move to Etienne now. And I'm going to ask you, if you could just give us a brief history  
4 of the use of fog and atmosphere in our industry. And before I do that, let me just let me just introduce in Etienne,  
5 you can tell us a little bit about your company, and where you're placed in the market and how you've been...  
6 connected to the entertainment business.

7  
8 Etienne Grignard - Managing Director 41:51

9 I'm not sure how I get out of this, apologize we use Teams most of the time. Oklay, Can y'all see me or not?  
10

11 Mark Doering-Powell, ASC 42:00

12 Yeah, we can see you. Are you talking? Are you seeing Ms. Rossol's screen still? Is that what you're seeing?  
13

14 Etienne Grignard - Managing Director 42:06

15 Yes, I believe so.  
16

17 Mark Doering-Powell, ASC 42:08

18 Can you all see him?  
19

20 Etienne Grignard - Managing Director 42:10

21 Um...  
22

23 Eric Steelberg, ASC 42:11

24 yes, we see. We see him.  
25

26 Dave Perkal, ASC 42:15

27 There there could be a minimize window thing.

28 Yeah,



Etienne Grignard - Managing Director 42:20

Okay, it's bringing me up on what to share. I don't know if I'm sharing any documents. A little bit of background on Grignard. Grignard is a specialty chemical company where in numerous industries back in 1998, 99, the lighting equipment manufacturers saw a problem with different types of materials being utilized in the industry, no quality controls in the industry. Not enough in depth, safety and health research on the different ingredients that were being utilized, at that point in time, with this definitive need that Miss Rossol has identified Grignard came into the market to term is in our industry in most other industries is that, prior to Grignard entering the market, most of the fog related products haze related products were made by bathtub blenders. These are people that just got a tank, they got a whole bunch of materials and so forth. Some of the documents that we read, and we looked at the health and safety and some of the other information, it was difficult to ascertain even what type of fog products were composed of. So to speak, a witch's brew. And the fear of many of these equipment manufacturers was that there would be people that could get injured, hurt that they it that they weren't being safe. So we entered the market in 99. We partnered with many companies that needed to know they had a good product, that they knew that the product was safe, and that there was the health and safety testing going on. These include companies like Look and Rosco and Chauvet for instance. So with us, we manufacture for a number of different companies, as well as many of the retailers, who also have massive safety programs, people may not realize this but Party City fog go undergoes something like 15 quality control tests, including that of the water for bacteria toxicity. All of this is reviewed by people that do have certifications that do have ample experience in the realm of toxicity and personal health. This goes all the way from fog to cosmetics and so forth. So that's how we're involved in the market. So I'm just going to take us through a history because when we were asked about this, I said, How did we get here? So with that, stating, I'm going to start the you know, the first one I'm actually going to go to because there's a lot of miscommunications. But one of my questions is going to be... Can everybody see this?

Mark Doering-Powell, ASC 44:57

Yeah, here we go.

Etienne Grignard - Managing Director 44:59

1 Mark, you see this right now?

3 Mark Doering-Powell, ASC 45:00

4 No, I still have you do a screen share again.

6 Etienne Grignard - Managing Director 45:04

7 SreenShare...

8 See, it keeps saying share screen - and... share

10 Mark Doering-Powell, ASC 45:24

11 Yeah, there we go.

13 Unknown Speaker 01 45:25

14 Here we go.

16 Etienne Grignard - Managing Director 45:26

17 Okay, one of the important things that I do like most presentations and I'm going to try to go quickly if I talk too  
18 fast, just stop me if you want to ask a question or tell me to stop, please do so. But one of the things I like to do is  
19 identify the definitions as I'm talking about them first. I believe that everybody has a copy of this definition sheet.  
20 Just so that we all understand a particle is usually a minute by minute portion of matter. It usually contains mass and  
21 solids. Pollution particles, for instance, that were referenced earlier have a lot of solids in them micro droplets or  
22 liquid phase with the size less than Four microns, vapor when we refer to it is a gas. A mist is usually water droplets  
23 that are suspended in the air. Theatrical smoke haze and fog that are water based are composed of micro droplets.  
24 theatrical haze, what oil is composed of micro droplets these days of USP white oil. Summon ionic is the what came  
25 out of the common hazers. Next, hold on.

26 I do want to put this definition in there because people start thinking of smoke haze fog. We are currently working  
27 with most of the Mass Transit Authorities with reducing social distancing, with COVID utilizing technologies from  
28 the theatrical industry. I'll go into those studies in a little bit if there's time, but people have to differentiate the

1 difference between a theatrical smoke that's made up of liquid micro droplets and that of cigarette smoke tobacco  
2 smoke is made up of thousands of chemicals as we know 70 of those chemicals cause cancer This is not the case  
3 with theatrical smoke. When you click on that link, you'll also notice that when it comes to vaping, that the issue of  
4 vaping is not related to the glycol Ms Rossol is absolutely correct when she says that there's a lot of things that are  
5 bad. If you go to the American Cancer Society, which does have a number of toxicologists and doctors and very  
6 Certified staff. It's not the carrier that they're concerned, they are not concerned with the propylene glycol, the  
7 glycerin that's found in it, they will call out that all of the problems that are occurring are due to the nicotine and the  
8 other additives such as flavorings that are put in there. This is not...

9  
10 Monona Rossol, MS, MFA 47:37

11 No no no no. No. Anytime you burn anything with carbon in it, you get all of that stuff.

12  
13 Etienne Grignard - Managing Director 47:45

14 Thank you Ms. Rossol. I did not interrupt you. I do appreciate what you're saying. Although as we go through the  
15 history of it, you'll see that we do not burn any of these products in... (interrupted)

16  
17 Monona Rossol, MS, MFA 47:54

18 I know that.

19  
20 Dave Perkal, ASC 47:57

21 Monona, If we could just just go through each panelist, and then I promise I'll give everybody a chance to redress.  
22 Thank you.

23  
24 Etienne Grignard - Managing Director 48:05

25 Again, fire smoke is visible paper. That is what Monona is right now referring to, and that's usually burning a carbon  
26 material. Again, what's coming out of theatrical fog and haze machines is not fire smoke, it's not cigarette smoke.  
27 What they're referring to right now is fire smoke.

1 So, the two cannot be interchanged. I will mention that a pollutant is something that pollutes the air any substance  
2 has certain chemicals or waste products that renders the air, soil, water or other natural resources harmful or  
3 unsuitable for a specific purpose. In the application of fog and haze, these are not classified as pollutants they are not  
4 pollutants. Propaganda is a term that I will term term that I will use in the history because there's a lot of propaganda  
5 in two different ways. Propaganda is information, especially if a biased or misleading nature, use To promote or  
6 publicize a political cause or point of view. There's also opinions which is judgment formed about something not  
7 necessarily based on fact, or knowledge - and science is the intellectual practical activity encompassing the  
8 systematic study of the structure and behavior of the physical and natural world through observation and  
9 experimentation.

10  
11 Okay, so now that we got the definitions, let me go to - right here, I think we have a history. Can everyone see that?

12  
13 Mark Doering-Powell, ASC 49:47

14 No, not yet.

15  
16 Etienne Grignard - Managing Director 49:48

17 Oh, you okay - And if I go back - Okay, now can you see that?

18  
19 Mark Doering-Powell, ASC 50:16

20 No. Not yet.

21  
22 Etienne Grignard - Managing Director 50:19

23 Okay. Let's try one more time here. Hold on.

24  
25 Mark Doering-Powell, ASC 50:29

26 Let me go on screen share, then go back in. Oh, here it comes.

27  
28 Etienne Grignard - Managing Director 50:33

1 Okay, thank you. I know what I need to do. Here we go - If I go to master presentation. Hold on, I'm just gonna  
2 close, the last one that we're in. Apologize on this, we usually use Teams.  
3  
4 Mark Doering-Powell, ASC 51:37  
5 No, it doesn't - if it doesn't work, maybe you want to send it to me and I'll turn the screen sharing because talk a long  
6 while I go through it.  
7  
8 Etienne Grignard - Managing Director 51:43  
9 Sure. I could also ask Grishma - Grishma can you share it?  
10  
11 Grishma Desai, ASQ, PMI 51:47  
12 Yep, I'll share it with.  
13  
14 Etienne Grignard - Managing Director 51:49  
15 Okay.  
16  
17 Mark Doering-Powell, ASC 51:50  
18 Thanks Grishma.  
19  
20 Grishma Desai, ASQ, PMI 51:51  
21 Can you all see the screen?  
22  
23 Amy Vincent, ASC 51:54  
24 Yep.  
25  
26 Mark Doering-Powell, ASC 51:55  
27 There it is.  
28

1 Etienne Grignard - Managing Director 51:56

2 Great. Thank you. Thank you Grishma.

3  
4 Yep, just go to the slide presentation. Okay, so the first question I asked is how do we get here? So we're going to go  
5 through real quick, a brief history. I'll take it from the eons ago up to 1999 which is one Grignard entered the market  
6 and why we entered the market. I'll talk about what happened in 2009, as well as then what happened and, and really  
7 for the 2020, but we will not discuss what is currently going on with COVID and the research that's being conducted  
8 by Harvard, Columbia and the other medical doctors. Grishma next.

9  
10 Okay, just a brief history of burning oil was what was utilized for close to 400 years it was utilized at the Globe  
11 Theater. It is actually attributed to burning down the Globe Theater a few times. Thermal foggers much very similar  
12 to the ones that are currently used today was actually developed by Dr. K.H. Stahl in 1939 for the German military.  
13 These were massive machines that they utilize to fog out the fronts for Different military operations from the 19.  
14 The next one is the cone hazers. These were very interesting devices they used ammonium chloride the ammonium  
15 chloride was heated up. When it heated up it created a vapor, the vapor reformed in the air, the vapor was formed of  
16 hydrogen chloride and ammonia particles. When it formed again in the air, it had micro particle sizes, which was  
17 utilized as haze. Next, Dave. I am gonna ask if I talk too fast, just let me know. I know that we're pressed for time.

18  
19 Dave Perkal, ASC 53:32

20 Ah we've seen interviews with Scorsese, we can keep up go ahead.

21  
22 Etienne Grignard - Managing Director 53:37

23 Oil crackers, popular from the 1930s the 1990s. A lot of times they used crude oil as it moved on, went over the  
24 white oil. This was pressured air that was forced through a tub of oil to generate a haze, the old fashioned ones, the  
25 large particles would fall back to the stage and the small particles would go off into the air and were released.

26 Around the 1990s, the technology had advanced to where the the, the technology now became atomization  
27 technology which produce smaller particles. It didn't have the large particles that fell on the stage. One of the  
28

drawbacks of the oil hazers is that since it doesn't volatilize and it doesn't go off, you would get an oil film on electronics and some surfaces. Next.

Glycol. So the glycol became big back in 1984, Rosco received the Oscar for Science and Engineering from the Academy of Motion Pictures. Glycol hazers also became popular around the 1990s utilizing the same technology as the oil hazers. Next. In 1999, so between 1984 and 1999, Rosco came out with a good product. They did have some products that had to be reformulated like later on as more health and safety information was there. But what happened in 1999 is that there was a look at many of these reports that were coming out where there was concerns about people's health. And the equipment manufacturers such as the lighting manufacturers saw that there was a definitive need in the market to get away from the bathtub blenders. Up until 1999, nearly all of the producers of fog would have either been a lighting effects manufacturer, or had been somebody in the back of their garage. When we read some of the reports there were these Witch's brews that contained everything from toxic ethylene glycol, crude oil, acetone, just a whole bunch of nasties. So in 1999, Grignard did take the step into the market as the first company that runs quality control product stewardship, and had the expertise to look at the health and safety data. Was there a question?

Okay, um in 1999 - wait go back one. So as part of that, we looked at where the market was up until 1999, this stuff was all over the place, and Monona has a lot of good points and I understand her concerns. As of 1999, you know, we got in there we looked at parallel technologies health and safety evaluation and quality control. Go to the next. As far as parallel technologies, we look at things that are utilized in other industries and what is the effect of these raw materials, whether people, some of the realization is that for instance, glycerin is provided and given to kids nearly at full strength as a laxative, sometimes. Visine the lubricating, the lubricating Visine is composed of glycerin and propylene glycol. Almost all of your eyedrops that are directly put into your eye are composed of fog fluid with varying amounts. I mean, in all in, you know when you look at their ingredients, and maybe 1% or 2% however, that amount of propylene glycol or glycerin that's put directly into your eye is utilized to relieve redness. Other things, personal care products, shampoos, personal care, sexual lubricants are all made of propylene glycol and glycerin for the most part and air - air sanitizers or air disinfect - not air disinfectants, air sanitizers products of that nature, which go after odor causing bacteria are utilized almost exclusively of TEG. Next slide. So knowing this Grignard company, we looked at people that had certifications that had their doctorates, that were medical doctors that were



1 experts from the different industries and from the government organizations. This is just a brief summary of the  
2 review assessment on toxicology. I understand that on an SDS it does not show all of this information. In order to  
3 get this information you have to dive down you have to look at the studies because the manufacturers of these  
4 materials do not want to take any responsibility whatsoever. So these, this is a short list of the information that was  
5 available as of 1999 when we entered the market. Next slide. This is more studies that were conducted, there is an  
6 extreme amount of information that is out there. Next slide.

7 From 1999 to 2009, these are additional studies that we looked into. That's part of our continuous improvement  
8 process continuous health monitoring. That is what's required as part of product stewardship. Next slide. People um,  
9 some people may not understand what it means to be ISO 9001 compliant, it does not mean that you make a great  
10 product. It actually means that when you make a product, you make it exactly the same way and you take  
11 responsibility for that product. Now Grignard does make a whole slew of fog fluids - you could see him in a you,  
12 you obviously all utilize them. They come under different names and stuff, but when we make these for our  
13 customers, it's for the reason that we have, we evaluate our suppliers for quality control, we look at the raw material  
14 product specifications. Grishma, who's on the line is certified by the American Society of Quality Engineers and  
15 Quality Chemists. She has a program for doing inbound quality controls, we look at that, we look at lot numbers,  
16 there's 100% traceability in the event that, that there's ever a product that's coming in, there's an extreme amount of  
17 quality control that happens, and then an extreme amount of product stewardship, so that we can see where that  
18 product goes, what the lot number is, and have full traceability to every raw material that's involved. At Grignard,  
19 for example, we test every product before it goes out. We do microbial testing, and so forth. Next.

20 2009 there was an interesting thing that happened in the market, due to biodiesel and renewable energies and the oil  
21 spiking in 2009, glycerin prices just plummeted. Almost no glycerin or very little glycerin was utilized in the market  
22 prior to 2009. Once the bio diesel industry came on its waste product or its byproduct rather I say is glycerin or  
23 crude glycerin that was then refined into USP glycerin - prices dropped from \$1.50 a pound down to 20 cents a  
24 pound. And all of a sudden there was this reemergence of bathtub blenders. These reemergence of bathtub blenders  
25 are very savvy in the digital marketing scheme and social media - they were able to get out there they were able to  
26 get out and get the word out to all the people in the industry on how bad some of these ingredients were, whether it  
27 was PG, TEG and so forth. There was widespread propa - propaganda in order to create profit. This is how they sold  
28 their glycerin based products that and for others to obtain notoriety. The information that they provided was not

1 based on science. It was rather based on opinions and in many cases, it was propaganda for profit. There was also  
2 this creation of experts in the industry that may not have the credentials, where they shared their opinions and  
3 emotions which we fully understand the opinions and emotions, but especially in this day and age, we have to stick  
4 to science. I mean, global warming is happening and it is caused by man. Go to the next.

5 This is an example of propaganda - company Froggies Fog it sends off email to Brad Ritti at Universal, saying that  
6 tryethelene glycol is extremely hazardous, and that they will never use the product and this is how the propaganda  
7 machine started. They go to one person who's working with the product. They say, "hey, here's the issues that are  
8 going on" but they take it out of context. That goes from Brad Ritti, and then it goes over from Brad to Scott and  
9 Merge... next, next slide. It goes from Scott all the way up to Steve Phillips. So now you have this whole cluster of  
10 misinformation going around. And what's interesting from it, and when we refer to it as propaganda, profiteering,  
11 please go to the next slide.

12 What's interesting about it is that it was all said as - it was all false, it was all fake. It was all that what they were  
13 saying is completely different than the truth. Because what you'll see is that on their material safety data sheet for  
14 the bogfog, and it's highlighted down below, you can't see it from here, but their product contains tryethelene glycol.  
15 In fact, if you go to their website, they sell tryethylene glycol, but that's what I mean by misinformation. People are  
16 saying, hey, this stuff is bad, bad, bad. And in some cases, they get a lot of notoriety for it. And then on the other  
17 side, there's definitely a profit profit aspect. Go to the next slide.

18 Just to finish up the history aspect of it. 2020, parallel technologies, Gri... glycerine prices are now skyrocketing  
19 because there's very little biodiesel being manufactured. So you'll see a big change in the market going back to other  
20 forms of products. Grignard has utilized its parallel technologies, very similar to how we did it when we first came  
21 into the market with different ingredients. You know, the ingredients that are utilized by companies, such as those  
22 that I previously mentioned, it is the propylene glycol, it is the TEG, it is the DPG, it is the glycerin in many cases,  
23 but that's only after a massive amount of health and safety studies and peer review. I will mention that the right now,  
24 several universities, several mass transit agencies, several commercial buildings, entities ranging to sports teams and  
25 so forth are currently looking at this haze as a solution to COVID-19 it is because of its disbursement that goes  
26 throughout the entire air and because it disperses so well, so the cinematography industry and the use of these  
27 products are right now being looked at for the efficacy studies against the COVID virus. We are looking at this  
28 being scientific, it's being tested by FDA and others. And really where I see this industry going and the fog haze

1 industry and there's about to be a gigantic outreach on this is the education of the operator and the patron because  
2 the operators, the people that use it, need to know what's safe, and they need to have the facts and it needs to stick to  
3 the science.

4  
5 Dave Perkal, ASC 1:04:39

6 Thanks again. I have a quick question for you. Um, yes, so you mentioned DPG, PG, VG and TEG of those  
7 chemicals which ones are so far - like, and I know that you're just a wholesaler of these products and these products  
8 are used by other retailers like say Rosco or stuff like that. So I guess my first question is, how much market share  
9 do you have within the retail industry that supplies the motion picture business? Like, do you place do you feel like  
10 you supply 50% of the industry or 75% of the industry or...

11  
12 Etienne Grignard - Managing Director 1:05:19

13 The Grignard company does not sell any products direct the only product that we would market direct is the  
14 Grignard Pure and that's due to EPA regulations. I don't know the market share for your specific industry that would  
15 go to like a Chauvet, Look or Roscoe. I do know that when you look at it on a total basis, meaning the, all the  
16 industries you know the industries include houses of worship, they include sporting events, like every NBA game  
17 has it, every National Hockey League game has it. Almost every trade show that you go to uses fog and haze. What's  
18 interesting about those areas is that there isn't this same amount of misinformation in the air, and the concerns that  
19 have been raised in this industry specifically, just they just don't exist there. And maybe because people don't know,  
20 it could also be because there isn't an issue. People don't see the smoke, they don't see the haze in those markets. But  
21 to answer your question, I can't answer the exact market share of our customers. These people buy truckloads of  
22 material, we do not work with anybody direct in terms of end users. So you would really have to look at all of our  
23 customers to determine what they are.

24  
25 Dave Perkal, ASC 1:06:43

26 Right? I was just I was just curious because I you know, we all recognize the name Rosco. We recognize Chauvet  
27 we recognize some of the other names that you supply to. I'm wondering now if we could if we could turn to... Mr.  
28 Jordans, who's our friend who's joined us here who has over 40 years experience at the EPA. And if you could

1 explain to us maybe how what's the process of getting an EPA regulation or approval for atmosphere and where are  
2 we now with that?

3  
4 Bill L. Jordon - EPA 1:07:17

5 Well, thanks, Dave. I'm gonna I've got a PowerPoint presentation too. And, and I'll try to make sure I can get the  
6 technology to work here. So bear with me a second. Here you go. D'sat work for folks ?

7  
8 Grishma Desai, ASQ, PMI 1:07:38

9 Yes.

10  
11 Bill L. Jordon - EPA 1:07:39

12 Good. So um, it, as Dave said, I've worked at EPA a long time - I retired in 2016, and I'm now doing consulting  
13 work with companies like Grignard, but I also do a lot of volunteer work with environmental advocacy  
14 organizations like the Environmental Protection Network, Farmworker Justice, you can see some others listed here.  
15 You ask Dave about the approval process, and one of the interesting things is that many of the some of the  
16 chemicals that are used in haze products are also used in antimicrobial products, things that kill bacteria, viruses,  
17 other microorganisms. And these products are regulated by EPA. They're called pesticides, but they're not  
18 necessarily like the things that get sprayed on cornfields and so on. They're really more familiar types of products  
19 like Lysol, toilet bowl sanitizer, or Clorox Disinfecting wipes. And those products are subject to a pre market  
20 approval process called "registration" which means that the companies have to generate a lot of data and make it  
21 available to EPA to review before EPA will approve the sale and distribution of their products. The companies have  
22 to provide data on the effects on people, toxicity and the people who are mixing and loading applying the the  
23 product, or the people who could be exposed through any number of pathways through the food that they eat the  
24 water they drink, the air they breathe. We're looking at EPA at a very broad spectrum. We're also concerned about  
25 effects on environment and for antimicrobial pesticides. The companies also have to prove that they work - that they  
26 are effective, in fact, at killing microorganisms. That first review that gets a product onto the market is not the only  
27 review. EPA had - is required by law to reevaluate and periodically update his registration decisions to take into  
28 account new scientific information, changing policies. And EPA long has had a policy of making its determinations

1 public. So the consequence of that is that I was able to go back and find a lot of excellent current scientific analysis  
2 on the safety of TEG triethylene glycol, propylene glycol and di-propylene glycol used in aerosols, because as  
3 Etienne pointed out, these are common ingredients in air sanitizer products that are regulated by EPA. So would it  
4 be helpful if I talk a little bit about what that safety information shows ?

5  
6 Dave Perkal, ASC 1:10:59

7 Yeah I mean specifically to those those chemicals that are involved in inherent in our atmosphere products, please.  
8 Thanks.

9  
10 Bill L. Jordon - EPA 1:11:07

11 Sure. So, um, I guess that I do want to emphasize as you just pointed out that that I'm only going to talk about these  
12 three chemicals TEG, PG and Dipropylene Glycol, not the other smoke and haze products like glycerin or mineral  
13 oil or, or even other glycols. And I also want to underscore an important point. There are a lot of things that we  
14 people use in our everyday lives like aspirin or salt, that in small doses are okay. But they do have hazards. That is  
15 to say that if you have too much of them, you can actually be harmed by that exposure, too much aspirin or too  
16 much salt can be actually fatal. So it's important to talk about the risks here, which depend both on the property of  
17 the product to cause harm, and on how much exposure. So I'll, I'll try to draw out the importance of looking at both  
18 elements of the attributes of a particular chemical. What you see here is the kind of steps I go through, ask whether  
19 we have enough information to understand the hazards. We'll look at what we learned from human experience. Then  
20 we'll look at what we know about exposure to these chemicals. And then I have used a sort of preliminary risk  
21 assessment following the methodology that EPA uses to evaluate these safety of these chemicals. And then I'll sort  
22 of wrap it up with what other Government agencies and independent safety assessments have said on that front.

23  
24 So, um, EPA, as I pointed out requires a lot of information, and in a document issued in 2003, they concluded that  
25 the toxicology database is complete and sufficient, and they looked at - they looked at a whole broad range of types  
26 of toxicity, short term or acute sub chronic, lifetime exposure, developmental effects, that's birth defects and  
27 reproductive effects, cancer causing properties, the ability to affect the human genes as well as other studies. And so  
28 the consequence of that and they made the same conclusion the toxicology database is complete. for PG and DPG.

1 They came back again and 2013, and you see the citations here and reaffirmed their conclusion that they that there's  
2 a very extensive Complete database and the effects the hazards of TEG, DPG and PG are really well understood.  
3 You can find a lot of studies referenced in the NIH hub chem database on these chemicals that are they reached  
4 basically the parallel conclusion as EPA has reached. So there is also important to look not just in animal studies and  
5 that's what is primarily in the EPA databases, but also at the human experience. And doc, uh, Ms Rossol mentioned  
6 the Moline Study, it's I think a useful study to understand with the human experience - it looked at 439 adult actors  
7 and focused really on local effects on the respiratory tract and eyes. So it doesn't purport to be a chronic toxicity  
8 study, and it is an epidemiological study and I'm going to digress for a second and underscore something about  
9 epidemiology that's important to understand. Epidemiology takes, it looks at two different phenomena and sees  
10 whether they appear to happen at the same time. So they don't - epi studies do not prove causation, they show  
11 associations. Sometimes those associations are in fact, real revealing that A causes B - sometimes they don't. For  
12 example, after World War 2, lung cancer rates went up, so too did television sets by the American public bought a  
13 lot of television sets and I don't think anybody believes that television sets caused lung cancer or vice versa. It also  
14 happened that cigarette smoking went up a lot after World War 2, and that scientists have figured out was what  
15 caused the rise in lung cancer rates. So this study is an epidemiological study, it shows the association between  
16 exposure to these five different glycols that were used in the smoke and theatrical effects that was - the actors were  
17 exposed to in their shows. The Moline Study included sort of short, condensed profiles of each of the glycols, and  
18 I'll go into more depth about TEG and PG, but I'll just say that compared to the other three di-ethylene glycol,  
19 ethylene glycol and buylene glycol - TEG and PG struck me as good deal less risky, less hazardous than those other  
20 three glycol materials.

21  
22 Dave Perkal, ASC 1:17:37

23 Dr. Jordan just interrupted just for one. I have a question about that last slide. In the Sinai Moline report, one of the  
24 questions that I had after reading that report was the fact that there was a conflation of sources. They were looking at  
25 glycols and oils, but they never separated the two. So they use them all as one source, so oils and glycol together,  
26 produced irritative effects. So I was just wondering if there was any study that, that this is one of the things that I  
27 just wanted to remark about - I don't know if you have a comment on it.

1 Bill L. Jordon - EPA 1:18:14

2 Yeah, that's a that's a great question and observation. So there is an association possible between the exposure to the  
3 glycols, but because this study doesn't separate out which glycol is associated with which effect - it's not possible to  
4 tell whether it's TEG or PG or DPG or which one...

5  
6 Dave Perkal, ASC 1:18:43

7 Or mineral oil right which know...

8  
9 Bill L. Jordon - EPA 1:18:45

10 Or mineral oil. Exactly.

11  
12 So all it left me with was maybe these theatrical products are causing a problem. And I think it's interesting to note  
13 in their reviews, I've underlined it in this quote, that the findings may reflect a negative health effect, but the health  
14 impact of exposure to theatrical agents or other factors. So, this possibility is that they suggest physical demand that  
15 the the number of complaints about raspy vocal cords went up over the weekends when they had to do more shows  
16 compared to during the week. So that's a possible alternative explanation of what was going on. It's it's just  
17 suggestive, it's not definitive. It might well be the theatrical materials, but you can't tell which material necessarily it  
18 was.

19  
20 Dave Perkal, ASC 1:19:55

21 One of the other things that I noticed in that report is they also noticed that there was a 5% rate of asthmatics  
22 reported in that study. But then when you compare that with a national averages, there's also a 5% nationally, rate of  
23 people with asthma at the time. So, I just I just was it was hard for me as a non scientist or epidemiologist, to figure  
24 out so clarity like, which is the exact component that's causing the irritant, you know, when you mix, like in your, in  
25 this slide, it says it says, with greater exposure to peak levels of glycols and mineral oil were observed. It doesn't  
26 separate glycols or mineral oil. You see what I'm saying ?

27  
28 Bill L. Jordon - EPA 1:20:33

1 That that's right. And so Ms Rossol talked about it not being a really solid study or making predictions about safety,  
2 particularly of an individual chemical. And I think that is, exactly, that's a fair assessment of the study. But having  
3 said that, is still helpful, and I'll talk a little bit more about it later on. I wanted to get to the NIOSH study, it has  
4 some of the same characteristics as the Moline study. It looked at smoke from multiple glycols, it doesn't distinguish  
5 among them. That even there, the conclusion was that no evidence set for theatrical smoke at the levels found in  
6 these theaters caused occupational asthma. So, that's again, a limited study but suggests that at least for that  
7 particular evaluation, they didn't see any problems.

8 Mr. Grignard has talked about the long history of using haze products in settings outside of the movie industry and  
9 so far as he knows, and here's what he's told me is that that history has not produced people complaining about  
10 effects of exposure. So, again, not the definitive answer on this, but still suggestive of safety in my view.

11 So what I want to do is talk now about the exposure side. The Moline study is actually useful, because they did a  
12 very careful study of different exposure scenarios. They've looked at exposure to glycols, they range from 0.37 to  
13 160 milligrams per cubic meter - that's the estimated value and then they have the measured net values. So you can  
14 see that there's a pretty significant range, about 100 fold difference from the least to the most. The NIOSH study  
15 actually looked at individual glycols, which makes it particularly useful. The the triethylene glycol ranged from  
16 point - less than - 0.04 milligrams to 4 milligrams, so again a hundredfold variation but still in the single digits in  
17 terms of milligrams per cubic meter. I asked the Grignard company to generate some study data and provide them to  
18 me about the levels of TEG in haze products, and it varies depending on the density of the haze and the method by  
19 which the aerosols are generated. You'll see here that they range from a light haze 1.87 milligrams per cubic meter  
20 to a heavy fog where it's 4.87. So that's not quite as big a range as you saw in the Broadway theaters, but still a fairly  
21 considerable range. We'll come back to these numbers in a little bit because they are the ones on which I base, what  
22 I call my preliminary risk assessment.

23 And what I've done is here is to use the methodology that EPA uses when they're looking at air sanitizers and trying  
24 to decide whether letting people put that in their bathrooms is something that will be safe for them. So, the  
25 basically three steps in this approach and the approach that I'm using, again, is modeled on what EPA says is their  
26 approach. They in turn got that scheme from the National Academy of Sciences. You start by looking at all of the  
27 toxicity studies to determine a level of exposure that's referred to as the point of departure. It's from an animal study  
28 or some other studies that you feel confident won't cause any kind of adverse effect. Then because sometimes the



1 animal studies don't really tell you exactly what's going to happen in humans, you add uncertainty factors - Ms.  
2 Rossol referred to safety factors, they're the same thing - you divide the point of departure by the un... [garbled]  
3 factors to come up with a recom... [streaming skip] is to compare that safe level of exposure to what people are  
4 getting in the use of the product. If the exposure exceeds the recommended safe level you're going to have problems.  
5 If the exposure is less, well then there's no reason for concern. So that's what I did here - I looked at the toxicity data  
6 and it's important, I've quoted here from a bunch of the EPA publications looking, summarizing their reviews and  
7 you can go into the references that I cited to get the full discussion.  
8 But the the idea is to recognize that there are different types of effects and different types of... [garbled] reagents - so  
9 acute, meaning a one time exposure, doesn't produce effects until you're over 5,000 milligrams per cubic meter.  
10 EPA's got studies in their database that show if you administer the material by inhalation, repeatedly day after day,  
11 hour, an hour an hour long exposures, you don't see anything harmful, up to 1,000 milligrams per cubic meter. So  
12 based on that and trying to match what I imagine will be the exposure scenarios in in filming, the industry. I picked  
13 the point of departure for TEG as 1,036 milligrams per cubic meter - that's the value used in the Russell 1993  
14 Inhalation Study. I divided it by uncertainty factors of 100. They are the standard factors used by EPA to account for  
15 the fact that you don't know everything you don't know whether humans may be more sensitive than animals.  
16 Experience shows this almost always less than tenfold, but to be on the safe side, I picked tenfold uncertainty factor  
17 and the same thing - there's variability among people. So some people may be more sensitive than others, if they're  
18 immune compromised, or they have respiratory disease, or they're less developed immune systems like in kids -  
19 although the EPA data show there's no difference between adults and children. But in any event to address all of  
20 those unknowns, the standard uncertainty factor is again a 10x. So you multiply 10 by 10 to get 100. And then the  
21 dividing the thousand milligrams per cubic meter by the 100 - my recommendation is to have, I mean you can't see it  
22 on the the slide here, but it's 10 milligrams per cubic meter. I'll note that that's similar to the ANSI standard for all  
23 glycols. It's the time weighted average that is a repeat exposure over days. It's 4 times lower than the peak level  
24 recommended for glycol by ANSI and 7 times lower than the peak level recommended by the Moline Study.

25  
26 Dave Perkal, ASC 1:29:36

27 Mr. Jordan just not to interrupt just to get some clarity here when we're talking about all these parts per million and  
28 the density of the fog a lot of our as cinematographers just go "Just give me a little bit more fog. Okay, that's

1 enough. Oh give me less fog" You know, and so, we we need to relate to it but kind of a visual way. So like if you  
2 were going to look at the hand in front of your face, you know, would you be able We'll see it and you're in the  
3 heavy or is moderate, where you start to lose definition in your hand. I mean is there's something that you could  
4 relate to visually for us ?

5  
6 Bill L. Jordon - EPA 1:30:07

7 A light fog is is doesn't block, you can read a sign at 10 or 20 feet. It'll be a little hazy, but it doesn't get in the way  
8 of being able to read a sign. A heavy fog, however, that that will become more difficult. It'll obscure smaller letters.  
9 So there's a range here on the Grignard company has a series of visual presentations that didn't work into this slide  
10 set, but maybe on the QA Grishma or Mr. Grignard could pull those up and we can show you what they mean by  
11 light, moderate heavy haze. So, this slide is the one where I compare the safe level of 10 milligrams, and the  
12 different milligrams per cubic meter measured for the different densities of hazes fogs and what you'll see is that the  
13 heaviest of the applications is still less than half of the safe level. And the light haze, which I understand is sort of  
14 all used in the film industry is only about 2% of the safe level. So what that means to me is that even even under the  
15 heaviest use of a typical haze product, a person wouldn't be exposed to less than half of the safe limits. Put another  
16 way the TEG exposures would range from 205 to 5000 times less than the dose that caused no harm in test animals.  
17 TEG is the one that I used to see example, but the other two glycol products dipropylene glycol and propylene  
18 glycol have similar toxicity profiles, so I would expect them also to be incapable of causing systemic harm under the  
19 kind of use conditions that we're talking about, although they might produce short term mild eye irritation, but that  
20 would be simply a matter of just go outside and get a little fresh air or go into a room where it's not being used.

21  
22 Dave Perkal, ASC 1:32:59

23 And just to circle back, Mr. Jordan.

24 When you say 10 fold, that means 10 times 10, so 100 times safety factor is that correct?

25  
26 Bill L. Jordon - EPA 1:33:08

27 That's correct.  
28

1 Dave Perkal, ASC 1:33:09

2 So you're saying it has the TEG has almost twice the hundred fold than if you set it as less than half, right?

3  
4 Bill L. Jordon - EPA 1:33:17

5 Yes. Yeah. Yeah, it would be 205 times I think, was the calculation that I came up with. Okay. And that's for the  
6 heaviest fog - for a light haze it's my numbers were 5,348 times less than the number in the animal studies that did  
7 not even cause harm. So

8  
9 Dave Perkal, ASC 1:33:45

10 So, so at worst on a movie set, it's 205 times the safety factor that the EPA allows, 205 times safer than the EPA  
11 limits.

12  
13 Bill L. Jordon - EPA 1:33:58

14 Yep. So twice, twice as these are not EPA limits. These are my own calculations using the EPA method, but it's  
15 twice as safe as the EPA limits 205 times less than the value that caused any animal any problem. You know,  
16 because I did this and I didn't have the benefit of talking to that many other scientists, I decided to go and look at  
17 other government safety reviews. EPA's re-regist - revaluation program. The re-registration eligibility decision said  
18 the agencies concluded that triethylene glycol is a very low toxicity by the oral dermal and the inhalation routes of  
19 exposure. There's no evidence that special sensitivity of infants and children they made the same conclusion  
20 essentially for the other two glycols. They said based on the available data the propylene glycol, dipropylene glycol,  
21 triethylene glycol pose no toxicological risks and it's rare in my experience that EPA, but they didn't even think it  
22 was worth spending time to do kind of risk assessment because it was so obvious to them that it was safe. And in  
23 fact, TEG is recognized in EPA safer chemicals program as a green circle material meaning it's verified to be of low  
24 concern. The Food and Drug Administration's approved it as indirect food additives and certain food contact  
25 substances. You can see the citations to the EPA regs I look for didn't find any OSHA NIOSH ACGIH CPSC limits,  
26 but I Grignard company did ask an independent consulting organization called Intrinsik to look at this and Intrinsik  
27 applied the US Consumer Products Safety Commission classification criteria for identifying hazardous substance  
28 and they concluded TEG is not classified as a toxic or corrosive or skin irritant or strong sensitizer when used under

1 foreseeable conditions. ANSI study I've mentioned they had a TWA time weighted average of 10 which  
2 corresponds to what I came up with at peak exposure limit of 40. So in summary, the, these the assessment that I did  
3 and the other assessments are pretty much in line saying that people can be exposed up to 10 milligrams per cubic  
4 meter without any particular concern. I don't know whether you want me to talk about this, but one of the questions  
5 that Miss Rossell raised was whether the use of the haze products could actually spread the COVID-19 virus and I  
6 do have a few slides can perhaps shed some light on that.

7  
8 That would be great. Thanks. [FIX] [??] \*\*\*

9  
10 Okay. Well she underscored and I just want to emphasize as well that that COVID-19 virus seem now seems to be  
11 spread primarily through the air, through contact with respiratory droplets that are produced when people are  
12 coughing or seeing or sneezing or, or even just talking and so she talked about the importance of wearing masks and  
13 I wholeheartedly endorse that. There is another pathway that is the transfer of viral particles from surfaces into one's  
14 mouth, their eyes or nose. But that's not the main way that things spread. So there's theoretically there's sort of two  
15 ways and Miss Rossol mentioned one way that haze products could affect the spread of COVID-19. That is that they  
16 could serve as a kind of transportation mechanism for viral particles that fog contacts the contacts the airborne viral  
17 particles and keeps them suspended for longer periods of time, and that then increases the chances that people will  
18 breathe them in the second way that haze products could affect the spread of COVID-19 is by actually inactivating  
19 the airborne viral particles, getting rid of them. I haven't been able to find any studies that really give a solid answer  
20 about haze as opposed to air pollutants like dust and such that Ms Rossol mentioned. So from my point of view  
21 that's, that's really an open question as to what the haze or fog might do. But there are there are some interesting  
22 studies about the ability of haze products to inactivate airborne viral particles. And there it depends, as best as I can  
23 tell from the scientific literature on the chemical composition of the haze. And Grignard company makes a haze  
24 product that they thought suspected might have antimicrobial products. So they arranged to have it tested at a  
25 laboratory called MicroChem , which is an EPA recognized lab for doing efficacy testing of antimicrobial products.  
26 And what MicroChem did was to take some viral particles on, introduce it into a test chamber using a nebulizer and  
27 then measure how many virus particles were suspended in the air. And then they turned on a haze machine and  
28 ramped up the amount of the material in the chamber to a moderate haze level and counted the viral particles at that

1 point. And the results were, you can see on the slide here, but the when they sampled at 10 minutes, they couldn't  
2 find any airborne virus particles. And what that means is that by introducing the haze product, the product  
3 inactivated or killed more than 99.9% of the tested virus in 10 minutes, or maybe even in a shorter period of time,  
4 you don't know because this test didn't check at a shorter period on the test virus was a non envelope virus, and  
5 compared to the SARS Coby to or COVID-19 virus, that's a harder virus to kill. So, it was a significant and  
6 encouraging results that at least that particular haze product looked like it would be useful in terms of addressing  
7 airborne virus particles. Other haze chemicals, other haze products, mineral oil and glycerin haven't shown any  
8 antimicrobial activity that I can find various glycols TEG triethylene glycol has shown some reduction on the  
9 streptococcus bacteria in hospital wards you can see the citation there and propylene glycol and in close places has  
10 also shown some effectiveness against bacteria. So, it may not be just the the granular days product but haze  
11 products that contain some of these glycols it the efficacy of products will of course, need to be demonstrated and it  
12 will depend I suspect a lot on the particular formulations and I don't know what exactly was tested in these other  
13 studies. So, that's those are my conclusions. The product government agencies say that these chemicals are our safe

14  
15 Monona Rossol, MS, MFA 1:42:55

16 FDA.

17  
18 Bill L. Jordon - EPA 1:42:57

19 TEG and particulars use as a haze product is going to be well below safe exposure limits PG and DPG probably or  
20 have the same profile. And the Grignard haze product looks like it could reduce the level of viral particles quickly  
21 and significantly and that might have the effect of reducing the transmission of COVID-19 unclear about other  
22 products, but some glycols show some promise So, thanks.

23  
24 Dave Perkal, ASC 1:43:37

25 Thanks a lot. Mr. Jordan, we appreciate you taking the time to explain that to us and we're right now we're gonna  
26 move on to Dr. Esposito Dr. Esposito, can you tell us a little bit about what you do and what a CIH is and what's  
27 involved in your work and how it relates to both the COVID virus as it as it stands right now and atmospheric  
28 products in our business.

1  
2 Dr. William Esposito, CIH, Dr. PH 1:44:09

3 Okay, can everyone hear me?

4  
5 Dave Perkal, ASC 1:44:11

6 Yep.

7  
8 Dr. William Esposito, CIH, Dr. PH 1:44:13

9 Did this, did the screen share?

10  
11 Amy Vincent, ASC 1:44:15

12 Yes.

13  
14 Dr. William Esposito, CIH, Dr. PH 1:44:16

15 Okay, great. Okay, so I've been a practicing CIH and I'm a Doctor of Public Health. I've been working in the  
16 environmental field of risk exposure for 35 years in the New York City area. Basically, whenever an environmental  
17 hazard comes up, I have to educate myself as to what that hazard is. Work with the real estate board and different  
18 agencies on the development of regulations for that hazard. And then I tried to always bridge between science and  
19 practice and practicality in the field. Most recently before COVID, I worked very hard on the Legionella issue,  
20 which was an outbreak in New York City. I don't know if everyone knows, but with cooling towers and there was a  
21 law that was written in a period of a couple of weeks, I had some input on that. And I've been working on that as as,  
22 as a qualified person and cooling towers in New York up until that time. Another project I was involved in was,  
23 New York State came up and said that all buildings with vermiculite are now assessed as containing buildings which  
24 basically turned 90% of the buildings in New York City from non asbestos to assessed as containing buildings. And  
25 I worked with the real estate board and the Department of Health to write a method which would allow us to see if  
26 there was asbestos in vermiculite containing materials. That took about two years I worked with Dr. Eric Chatfield  
27 on that. So, um, I've kind of got brought into this whole mix via a friend of mine, that's one of the world class  
28 engineers in New York City. I said, Hey, Mitch, what's going on, you know, with COVID and he sent me some

1 information on the Grignard product about its ability to inactivate viruses in the air. I was skeptical at the very  
2 beginning, I looked at the research that had been done in the 1940s by Dr. Puck, and this research was done in  
3 response to World War Two because they were really worried about viruses and or bacterial warfare agents and so  
4 this this research at a Chicago University was quite Interesting I found in quite credible. Also the scientists went on  
5 to be world renowned scientists, although the research kind of died in 1947, but it reappeared in a Harvard study and  
6 I think it was 2009 probably in response to the SARS virus, but it was an FAA sponsored document that was done  
7 by Harvard University. And I noticed that Jack Spangler was on that paper. Now. I did my doctorate in at Columbia  
8 University in New York City and my advisor was a student of Dr. Spangler. And Dr. Spangler is world renowned as  
9 probably one of the most expert research scientists in the environmental field that there is so I know him I saw  
10 Spangler I went Oh my God, if he if he's putting his name on it, Harvard's putting his name On it over their name on  
11 it. This stuff must work. So I got in touch with with Etienne. And I've been working for the last, I guess three  
12 months or two months on looking at the particle dynamics of the product and trying to figure out what the sizes are  
13 and what the the fate of the compound is and what the concentrations are at the different levels. And I think  
14 everybody we've, I've been hearing from Miss Rosso I was talking about having a particle counter in our hand.  
15 We've been talking about putting eye charts together, you guys were saying, hey, I need more smoke, I need more  
16 smoke. And so what is that what is the concentration was the particle concentration, what is the, the chemical  
17 concentration at those different levels. So that's kind of where I've been working. So I prepared a very short primer  
18 on particles that I'd like to go over. Um, Does that answer the question?

19  
20 Dave Perkal, ASC 1:49:10

21 Yeah, I mean, sometimes sometimes as cinematographers we just need a visual reference for what that is, you know,  
22 some of us don't look at our meter every single time. Do you know what I mean?

23  
24 Dr. William Esposito, CIH, Dr. PH 1:49:18

25 Right? Right. And that's why, and I think Grishma has had some of the particle charts that that we've been working  
26 on, although they're not ready to be published yet. But so I'm gonna whip through this very quickly a primer on  
27 aerosol. So I want to jump back from where Etienne went and I want everybody to go up another 50,000 feet. And  
28 so let's start. There are different definitions. Industrial hygienists have definitions for aerosols. EPA has different

1 definitions. So I'm coming as an aerosol scientists, definitions for particles. So an aerosol is not something that  
2 comes out of a spray can. It's a collection of solids or liquid particles suspended in a gas. So even a cloud would be  
3 considered an aerosol and it's very important to make that distinction. Okay, so you have liquid, do you guys see my  
4 pointer on the screen? Right? That's great. Um, so you can see here's a mist or a haze and I kind of picked that  
5 picture to show the fact that there's liquid droplets, right? liquids, and then there's construction related debris and  
6 dust which are solids. Okay, so I also want to go and make a very important point is that there's good things particles  
7 are good, right? There's therapeutic uses for particles. There's there's industrial uses for small particles. So there's  
8 there's some particles just because the particle is a particle doesn't mean it's bad. And I want to make that point very,  
9 very clearly because it's important for us to all understand, especially if there is some function of haze, or theatrical  
10 agents that could prevent the spread of COVID there's the bad here we see Dorothy in The Wizard of Oz, she was I  
11 think, pretty much everyone all of you guys must know that they use chrysotile asbestos, in that in that scene. That  
12 wasn't really a good use of a particle in that case, but then the ugly which was I lived through this I was a couple of  
13 blocks away from this and I lived for about eight years cleaning up after 911 and there is no doubt on anybody's  
14 mind anywhere that that was not a bad witch's brew of a hazardous substance of a mixed brew of particles that were  
15 from ultra fine to very, very coarse. Okay? So just to keep moving here, particle terms and properties you have  
16 liquids and and and the the Grignard products and the products that are theatrical smokes are liquid, they're  
17 spherical. There's fogs, mist sprays, and hazes and I think Etienne gave you some definitions there you guys  
18 probably know that. Then there's the area that's not quite so clear and haze comes in there. I've seen haze is kind of  
19 called a pollution but really, haze is a liquid but it's it's brought into secondary photochemical smog and things  
20 like that, which are secondary pollutants. So there's a there's a little particle mix in there. Smoke which Etienne  
21 talked about and fumes which are which is a change of a metal into into a into a fine, very fine particle. And the  
22 point here is you don't want to breathe in fumes, you don't want to breathe in smokes, you don't want to breathe  
23 these things. Then there's solids, um, there, they have irregular shapes compared to the liquids. These are your dusts  
24 related to construction, the fumes related to welding. And then the topic of the day is now bio aerosols. So, there are  
25 a lot of different bio aerosols out there in the environment all which have various properties, some public health  
26 effects and properties. The pH is very important. So if you have something that's an acid or a base, the World Trade  
27 Center dust was made up of very basic very caustic cement particles and things like that which caused a lot of  
28 respiratory distress. There was a lot of fiberglass in which is fiber physical but there was fiberglass in that brew,



1 which caused a lot of upper respiratory effects. toxicity has to be important, whether it's an ear, irritant and vapor  
2 pressure. There's physical properties that are important in health and and Ms Rossol approached this and said, we  
3 have to understand that I agree with her. That's why I'm talking about it right now. You have size, the size is  
4 probably one of the most important things the shape, the density, the phase, whether it's liquid into solid, the  
5 composition, the concentration, that's probably the second most important thing is size, and concentration and then  
6 toxicity. And the bio activity I'll just say because I spent 12 years in Harlem and the South Bronx looking at mouse  
7 and cockroach allergen in the air, and I and I found that the cockroach particles, the allergens were on very, very  
8 ultra fine particles that were in the air at all times where most people thought they were on heavy particles and didn't  
9 exist in the air. So it's very important to understand what size particles are because that's going to tell you how long  
10 these particles stay airborne. Other bioactivity things are irritants. Then there's pathogens, which are the viruses and  
11 just plain old toxicity. So getting into the particle size, I don't know if this will be helpful, but you have a human hair  
12 that's about 70 microns wide. You have grain of sand, which is about 50 microns wide. Then you have Pm 10. And  
13 here's your EPA standards that Bill Jordan was talking about, that used to be the standard for particles. Why?  
14 Because we could measure at those levels, but later in the late 90s, I believe it was they everyone said it was pm 2.5,  
15 which was even smaller. Now you're at a point 2.5 micron size article, which becomes important and everything's  
16 lower than that. And why is that? Well, because of where it gets into your lungs, okay, so here you see that there's  
17 different deposition mechanisms in the lung. So imagine this is your lung, your first branch or your lungs or branch,  
18 you have impaction of the larger particles, then you have gravitational settling of smaller particles. And the idea is,  
19 the smaller the particle, the further and further it gets down into your lung. That's indisputable. But in this case, we  
20 don't know how important it is. Here's a graph That I wanted to show a chart that I thought was very important  
21 because what happens everyone thinks the smaller the particles, the further they get down here, but there is research  
22 out there that says those little small particles can also get backed up and out if they're inhaled. So you see this chart  
23 shows you the deposition rate in the lungs, and you see how, at this point one to one micron size is probably the the  
24 least size that is retained by the respiratory system. So you see that that those particles aren't, aren't deposited in the,  
25 in the upper respiratory in the lower in the bronchitis in the, in the pulmonary airways, and not even so much in the  
26 alveolis. So the point here is, this is where most of your fogs and fumes are okay, or you're not your fumes your  
27 hazes are in this particle size range. So my point here is that we don't know how much of these particles actually  
28 stay in the lungs for a long time. Okay? So the fate of aerosolized glycols, this is from a paper that studied the the,

1 the vaporization of your aerosols, and they said that vapors condense rapidly to form fine droplets producing a  
2 visible aerosol. So that's the fog or the haze that you're seeing. The particles subsequently re volatilize back into that  
3 vapor phase. And then the glycol is rapidly evaporate from the surface of the droplets, resulting in reduced particle  
4 size and eventually complete vaporization of the aerosol. So, in fact, what we're finding is that these particles just  
5 vaporize and disappear. So we're not talking about particles even at all at the end. And Bill just spent a good 45  
6 minutes telling going through all the EPA data saying that there is no real toxicity data on that. So I kind of tested  
7 this this theory out a little bit in my laboratory, and here we have a chamber where I put a heavy dose of particle or  
8 haze, while this was a fogging machine. So you can see you can even see this aerosol cassette is actually in there  
9 right here, right? So that's a heavy fog. That's the one you can't see your hand. That's the one that was that. That  
10 level I think of for that Bill had four milligrams per meter cube. That's a pretty high concentration. I use this aero-  
11 cell, which is something that industrial hygienists use all the time for particle studies these days, and what happens is  
12 you pull the air through a vortex, and the heavy particles get stuck on a microscope slide. And then the air goes  
13 around. And after a period of time you collect those particles, you take it off, and you bring it into the laboratory.  
14 And here's the microscope slide. Now, what's important here is that there should be a trace right here, it should be  
15 dark. So if I was if I was, if I was analyzing for diesel soot, or some type of some of the smokes and things, you  
16 would have seen a black line across here, and you probably wouldn't be able to see through it with the microscope.  
17 The important point here, and I want to make it very clear is there is nothing on there. There is no trace whatsoever.  
18 That's the microscope slide. It's like it wasn't exposed at all the TEG disappeared. So here is that here is a  
19 microscope slide looking under 40 times, or 400 times, and we see that there is nothing on that microscope slide.  
20 Here's a sample of a sample that we took from another building uptown that had an air quality issue. And you can  
21 see that it's full of construction or dust related particles that are solids. Note that they're not spherical. They're they're  
22 irregular shape. There's stone, there's mica, there's there's silica, different things, there's some, there's some cellulose  
23 in there. So there's different a lot of different things, but that's usually what you see in indoor air in construction  
24 zones or something like that. Just to show you that. After we did the sample, there was nothing on the slide. So in  
25 summary, I just want to say this aerosolized product has been shown to be innocuous in formal government reviews  
26 went through that they are liquid form. They're not solids, they don't contain solids at all, intuitively, their size will  
27 allow them to penetrate into the lung. But the retention ratio is really not determined. And that was that little curve  
28 that I showed you earlier that the fact is that sometimes they can escape back out of the lung. And it has been shown

1 that in studies that the product evaporates completely and does not leave a residue and our experiment, corroborate  
2 that notion. And that's all I have.

3  
4 Dave Perkal, ASC 2:02:39

5 Thank you for racing through that being as brief as you can. I have a just a quick question. Um, a lot of times on sets  
6 we'll ventilate an area and then we'll hold the ventilation like stop the air conditioning machines so that we can hold  
7 the haze so that we don't see it moving because that's usually an undesirable effect, for us. Does that have any  
8 bearing on any of your studies?

9  
10 Dr. William Esposito, CIH, Dr. PH 2:03:04

11 Well, like I said, we've we've just been starting the studies, it would last a little bit longer, but it eventually  
12 evaporates it just doesn't move. You don't have the ventilation to to take it out and then bring in fresh air. So you  
13 don't see a move, but the particles and we have to we have to do more. I collected a lot of data I this came up. This  
14 week, we have an analyzed Grishma and I and another gentleman at Grignard have to go through the particle data,  
15 but there is data showing that the particles just evaporate, and those smaller particles disappear over time and very  
16 quickly.

17  
18 Monona Rossol, MS, MFA 2:03:48

19 Okay, can I say something?

20  
21 Dave Perkal, ASC 2:03:51

22 Yeah, just one quick second, because I'm just going to go to one person, then we're going to open it up for questions  
23 because I know everybody.

24  
25 Monona Rossol, MS, MFA 2:03:56

26 I've got a lot to say to you, Bill.

27  
28 Dave Perkal, ASC 2:03:58

1 Yeah, one quick second. Grishma if you can jump on now, because I know what we really need from you is a visual  
2 reference of all these particle sizes, and somebody told me that you had something like that.

3  
4 Grishma Desai, ASQ, PMI 2:04:10

5 So yeah, I'm just like Dr. Exposito and Bill Jordan mentioned in their presentations. I have a chart that shows  
6 visually what the different haze levels look like and what are the concentrations of the Grignard pure at each of  
7 those levels. I'm just gonna share the screen. Can you all see the screen now?

8  
9 Dave Perkal, ASC 2:04:34

10 Yes.

11  
12 Grishma Desai, ASQ, PMI 2:04:35

13 Okay, so we have six different haze levels that we tested for the concentration of the Grignard Pure product. This is  
14 at a concentration of zero ppm, you have no haze, you can see the symbol very clearly. We went up to a very light  
15 haze, a haze level which has 0.02 parts per million, and the light is at a 0.1 ppm. The testing that Bill Jordan talked  
16 about in the presentation was done in a moderate haze, which had a 0.15 parts per million of the Grignard Pure,  
17 based on his presentation and recommendation that should be at a level of 0.46 milligrams per meter cubed. So this  
18 was the level at which we tested the haze and we're able to show 99.9% inactivation. As you go up, the  
19 concentration goes up to a maximum of 0.25 ppm at a heavy haze, where you're not able to see what's behind the  
20 haze. So just wanted to show the chart to kind of give an idea of what the different levels were in the concentrations  
21 of the product as determined by Dr. Esposito.

22  
23 Dave Perkal, ASC 2:05:45

24 I appreciate that so much Grishma, and we're gonna keep you around for the questions because I know you're going  
25 to be a valuable resource being the lead chemists there. I think at this point, we want to open it up for general  
26 questions. So if everybody just wants to use the raise my hand feature I can call on everybody and we can go in that  
27 order.

1 Monona Rossol, MS, MFA 2:06:00

2 Unfortunately, I don't know how to do that yet.

4 Dave Perkal, ASC 2:06:04

5 Well, Monona. You have a question. I'm gonna go with you first.

7 Monona Rossol, MS, MFA 2:06:09

8 Oh, please, yes, I can hurry. Um, I've been sitting here taking notes. So I have, I have a couple of things to say. But  
9 Bill is really exciting because the first thing I wanted to say is that you really can't watch the fog and estimate it by  
10 eye in order to really know how how, what what the concentration is, for the simple reason that it's also very  
11 dependent on humidity, because those things actually are mixtures of the glycols and water. And that's the the kind  
12 of shine that they get that causes the fog to really have a nice dense look. And that begins to evaporate and so does  
13 now with Bill's studies show that the entire thing is evaporating. Now what we have.

15 Dave Perkal, ASC 2:06:54

16 I think just just answered that first part of your question, I think I think it was just me trying insert myself that there's  
17 a bunch of visual artists here. And a lot of times as photographers, cinematographers set the level by eye. We never  
18 we never can relate the parts per million we don't think about it, we just look at what looks good by eye, and so I  
19 was just asking for a little clarity to put numbers on that.

21 Monona Rossol, MS, MFA 2:07:01

22 And this is why we really do need the particle counter. But now that Bill shows that there's nothing on that plate that  
23 is really crucial, because now we have to look at the toxicity of the vapor exchange in the alveoli because now the  
24 chemicals are going through that way. There's no reason to assume they're not. And and so now it makes a whole  
25 nother area that we need to look at in terms of toxicity. So both particulate and the end, the end the vapor phase.

26 [???

28 Dave Perkal, ASC 2:07:53

1 Okay, great question. So, who wants to take that Bill? Do you want to answer that Monona's question about looking  
2 at the toxicity, Dr. Esposito...

3  
4 Bill L. Jordon - EPA 2:08:08

5 I'll take a shot at it. The - ah, study that the animal study that I used was, I believe the TEG exposure in the vapor  
6 phase. And so it, I think represents a worst case scenario in terms of the ability of the material to penetrate into the  
7 lungs of the test animals.

8  
9 Monona Rossol, MS, MFA 2:08:39

10 Yeah, but and I have something to say to you also, when you say that the NIOSH study did not show a connection  
11 with asthma, that tells you what I have my people look for that statement, to watch for it, because when you read  
12 NIOSH's whole conclusion, they decided that on the basis that they didn't have a large enough sample, they actually  
13 had more asthma - I think it was three to two - but they said their numbers were too small. They did not say there's  
14 no connection with asthma. They said we couldn't make a decision. We couldn't make a connection because the  
15 sample was too small. So try not to say that in your in your thing, because my people are waiting for that statement.  
16 So and so many other things that I would I wouldn't

17  
18 Dave Perkal, ASC 2:09:33

19 Minona if we could just pause for a second we get one of one of the audience members in here. Eric Messerschmidt,  
20 please.

21  
22 Erik Messerschmidt, ASC 2:09:42

23 Yeah. Thanks, Dave. Yeah, my question is for Miss Rossol. Thank you. Thank you for your presentation that to  
24 everybody. I guess you know my, I can I'm actually asthmatic I, I use propylene glycol as part of my Albuterol  
25 treatment every day. It actually helps me tremendously. But my my question is specific to movie sets and I think it's,  
26 it's specific to why we're all here today as related to COVID, I just want to I want to quote you. The reason we're  
27 here it is, is because you've been quoted as, as referencing, quote, "a significant number of COVID-19 cases  
28 routinely shed infectious virus into aerosol particles small enough to remain suspended in the air, which presents a

1 risk for airborne infection. Those particles remain suspended longer and travel farther when dispersed through the  
2 use of smoke, haze and fog. And I'm curious as to...

3  
4 Monona Rossol, MS, MFA 2:10:44

5 It may,

6  
7 Erik Messerschmidt, ASC 2:10:45

8 That's that statement. I mean, that that is that is actually that's, you know, that's quite that's quite a that's quite a  
9 statement. And, and I would, I would ask what sort of scientific evidence...

10  
11 Monona Rossol, MS, MFA 2:10:55

12 The only thing we, we only based on the fact that whenever we see pollutants in the air when whenever you see  
13 particles in the air, we seem to see it spread further. That was what the two Chinese studie said.

14  
15 Erik Messerschmidt, ASC 2:11:08

16 For sure, but that does that say they take it into account that I mean, I, as far as I can tell, there's substantial evidence  
17 that that triethylene glycol and propylene glycol have significant antiviral and anti microbial properties.

18  
19 Monona Rossol, MS, MFA 2:11:25

20 Well, it's...

21  
22 Erik Messerschmidt, ASC 2:11:26

23 shown here and I'm curious as to is that conjecture and assumption or Is that findings?

24  
25 Monona Rossol, MS, MFA 2:11:31

26 Yeah, of course it is. And then we because this is a different pollution then the Chinese were studying clearly but  
27 there's a reason to suspect that that may be the case and and what we need to do and you know, the minute that  
28

1 Grignard has an EPA registration number, and in and and directions on the back of his package, I will probably go  
2 with it. But right now, no ticket, no laundry, it's not on the N list. It's a No Go.

3  
4 Dave Perkal, ASC 2:12:02

5 Yeah, let me let me follow up on that Etienne if or even Mr. Jordans, if you could talk to us about I mean, I know  
6 COVID is a really relatively new thing that's taken over society right now. And they make a claim that it kills  
7 COVID. Mr. Jordan, maybe you can talk about what the process is to get that registration, has a registration been  
8 applied for is it in process now? Or do things move that quickly at the EPA?

9  
10 Bill L. Jordon - EPA 2:12:27

11 EPA is a bureaucracy compared to some others that I've dealt with moves fairly quickly, but not quickly enough to  
12 get a registration. Currently, the Grignard team, including Etienne, Dr. Esposito, and me, we've been talking to state  
13 officials and asking them to support an application to EPA - we've been talking to EPA, and we are hopeful that  
14 folks will move it ahead through the bureaucratic process to authorize the use of the haze product. But I just want to  
15 stress that and Miss Rossol, has pointed out, the burden is on Grignard to prove that the product is safe and effective.  
16 It's one of those cases where I appreciate the independent, hard look that EPA will give the product

17  
18 Dave Perkal, ASC 2:13:34

19 And then just a follow up, because what we're really here for is, is maybe they have a product that kills the virus. I  
20 know that there was some studies of the Puck and Spengler study. Before that we we've all been familiar with,  
21 where it did had some antimicrobial properties that were pretty effective. But neither here nor there. Do you have  
22 any reason to believe and this is the question for both Bills, Mr. Jordan and Mr or Dr. Esposito, Do you have any  
23 reason to believe that the COVID virus could be accentuated or exacerbated by the use of fog? Or do you have any  
24 bit of belief that you can possibly hypothesize that the COVID virus attaches itself to the fog material?

25  
26 Bill L. Jordon - EPA 2:14:22

27 I don't have any basis for saying that the use of haze materials fog materials will worsen the spread of COVID-19.  
28 The testing with the MicroChem laboratory and the other studies



1  
2 Dave Perkal, ASC 2:14:46

3 All right. you went into a black hole there for a second so  
4

5 Monona Rossol, MS, MFA 2:14:49

6 Let me just quick jump in here because you gave one reason why it is greater risk. You said. We hold the ventilation  
7 we stopped the ventilator... fog away. And that factor...  
8

9 Dave Perkal, ASC 2:15:05

10 Okay, one second. I'm sorry, but I think Mr. Jordan was talking and he went into like a digital blackout for a second.  
11 I just want I just want you to finish your sentence. And then I just want everybody to remember that I know it's, it's  
12 difficult times where we all have to have a conversation over Zoom, but it's got to work like a walkie talkie, we have  
13 to let somebody finish their sentence, and then the next person will talk because it doesn't doesn't work very well  
14 otherwise, but Mr. Jordan, if you could finish, because I think we lost most of that  
15

16 Bill L. Jordon - EPA 2:15:32

17 I don't know. I don't know if any data to say used to fogs makes COVID-19. worse. The data on the Grignard  
18 products suggests and I think pretty strongly, that the use of a haze product can actually lower the amount of  
19 airborne virus particles. So, overall, I think the haze is at least neutral and possibly beneficial.  
20

21 Dave Perkal, ASC 2:16:05

22 Okay. Thank you. And Dr. Esposito, I wanted to follow up on that. And I just wanted to add something that I've read  
23 from the CDC that humidity is also inhibits the spread of COVID. And if you're introducing an aerosol or product  
24 into the air, this water base you're in, in turn inducing and increasing the humidity. So same question with that added  
25 on to it. Do you have any studies that show the Covid is increased exacerbated, or is it or is it neutral with the  
26 atmospheric products?  
27

28 Dr. William Esposito, CIH, Dr. PH 2:16:37

1 There, there aren't any studies that I'm aware of, of using theatrical fogs or hazes or materials that I know of,  
2 conceivably, what Monona is talking about maybe in the idea of haze being photochemical haze and smog that we  
3 see in LA and we see in New York City, and the fact that there are other particles that may be the thing can adhere  
4 to not the Grignard product itself. Conceivably, maybe some somewhere they could attach to something so I - but I  
5 don't know about that. And then the idea of humidity - yes, they show that humidity is a factor in inactivating the  
6 virus. And my other friends that are engineers and in the city are looking into it, I don't know about in LA but in  
7 New York City in the winter, it gets very dry. And, and so you will probably see more humidification being used in  
8 in the winter times to keep the humidity up. Especially since if that if that kills influenza and things like that, maybe  
9 it's got an anti viral thing. And one other thing is we are looking at using the HVAC System to deliver the product  
10 and the haze. So maybe after a very quick mixing period, you wouldn't have some of those other issues you guys  
11 were talking about with the cloud moving.

12  
13 Dave Perkal, ASC 2:18:21

14 So am I correct in assuming that based on the recent CDC report that increased humidity has an effect of killing the  
15 virus? Not a total effect, but it does, it doesn't improve the kill rate - that if I were to have just a humidifier on in a  
16 dry environment, I would be safer than if I didn't have a humidifier?

17  
18 Dr. William Esposito, CIH, Dr. PH 2:18:41

19 I don't have enough data to show that either way.

20  
21 Dave Perkal, ASC 2:18:46

22 Okay,

23  
24 Dr. William Esposito, CIH, Dr. PH 2:18:46

25 but it would be intuitively it would make sense. Right?

26  
27 Dave Perkal, ASC 2:18:50

28 Right. Um, any other questions or Eric you still have your hand up. Okay, Cynthia

1  
2 Erik Messerschmidt, ASC 2:18:57

3 I have one more question. mean, I

4  
5 Dave Perkal, ASC 2:19:00

6 Hang on, hang on Eric. I gotta go to Cynthia cuz I

7  
8 Erik Messerschmidt, ASC 2:19:03

9 please, thank you.

10  
11 Cynthia Pusheck, ASC 2:19:04

12 Thank you. Um, I worry about pumping atmosphere through our air conditioning systems.

13  
14 Monona Rossol, MS, MFA 2:19:11

15 Yes

16  
17 Cynthia Pusheck, ASC 2:19:12

18 because I think you need to give the crew and all of us a break sometimes or it gets too heavy you have no that  
19 worries me. Um maybe that's wrong but so if we are in a world that we currently do it we fog up a room we haze up  
20 a room, we don't we turn the air off because we don't want anything moving. And then we might be in that room for  
21 you know, shooting for an hour so be for a break. So that's that's how we've all worked now. So I just want to ask  
22 Dr. Rossol about you were trying to say before that that to you is a big problem. And I hear whatever I'm saying that  
23 maybe we hope that a day you know air conditioning but it doesn't seem we're still gonna get the air moving so I still  
24 don't know if that's going to be a good way, to control the smoke from moving, anyway, if you can just address the  
25 issue of not having any ventilation for long periods of time.

26  
27 Monona Rossol, MS, MFA 2:20:08

1 Yeah, well, when you have a spreader, then you really want that air movement. In fact, one of the things that we're  
2 adding to some of the plans is that the ventilation system must meet the ASHRAE standard, and we are promoting  
3 the idea of going to a Merv 13 to 16 filter, so that we have a little more ability to capture and and to control the  
4 particles. So that's one of the areas that we're working on. So we're going to approve two basic types of ventilation.  
5 One are the ASHRAE recirculating systems with a good filter. And the other is an industrial system where you're  
6 using exhaust fans and supply. I'm on the committee for that, so I'm very good at designing those. But one of those  
7 two needs to be in the building because the first thing you want to look at is ventilation, you need that air movement  
8 in that exchange of air, you don't want the stagnant conditions. And if you've got one spreader in there who is just  
9 kicking off particles, you really don't want to be in a room like that. So we want the ventilation on we want it  
10 moving. We want good exchange.

11  
12 Cynthia Pusheck, ASC 2:21:23

13 Thank you.

14  
15 Dave Perkal, ASC 2:21:25

16 I just had a quick follow quick question for you Monona, uh, so if just so I understand cause I'm not a doctor, if you  
17 have a spreader in the room, and he's kicking off particles, we want to move the particles around the room more? or  
18 we want them to fall where they are?, I don't

19  
20 Monona Rossol, MS, MFA 2:21:40

21 Well, there's two droplets will fall anyway because when you have a good ASHRAE system, you still don't have a  
22 breeze. It's not like that. So, the droplets will fall but the smaller particles will lose their water they will dehydrate,  
23 they will become an aerosol, that the the issue that we seem to be seeing and then we see, you know, like the choir  
24 study where you just saw so much spreading from just one person. So we really need to make sure that the air  
25 movement is exchanging fresh air coming in contaminated air going out at a regular rate.

26  
27 Dave Perkal, ASC 2:22:20

1 Understood. And just another quick clarification. If I'm on a stage and it's 20,000 40,000 square feet, sometimes  
2 those air exchangers are up 30 or 40 feet from me.

3  
4 Monona Rossol, MS, MFA 2:22:35

5 Now you're talking about the very thing that I complain to ASHRAE about. The best exchange is at the ceiling, so  
6 you really need to move everything up to the ceiling. We really do want them to use eventually the the on under the  
7 floor systems that have been the new ASHRAE design, because that guarantees that the air actually goes through the  
8 breathing zone and and and the worst situation is in the winter when the air is coming in warm and it wants to rise  
9 anyway, you have almost all of your air exchange occurring at the ceiling and the people down with a rubber meets  
10 the road are getting bubkis.

11  
12 Dave Perkal, ASC 2:23:17

13 Okay, thank you for that. And then Rodney Taylor, ASC.

14  
15 Rodney Taylor, ASC 2:23:22

16 Can we go back to that chart one minute where we don't have to physically see it, but I didn't understand how far  
17 away the chart was to show the level of fog the graphic, how far?

18  
19 Etienne Grignard - Managing Director 2:23:35

20 10 feet

21  
22 Grishma Desai, ASQ, PMI 2:23:36

23 10 feet

24  
25 Rodney Taylor, ASC 2:23:36

26 10 feet. Okay, thank you.

27  
28 Etienne Grignard - Managing Director 2:23:40

1 Um, one of the things I'd like to add, and if we have time we can show this is that Grignard has been heavily  
2 involved with safety procedures for mass transit, for commercial buildings and so forth. When it comes to COVID-  
3 19, one of the illustrations that we utilize is an elevator. I'm familiar with the five different areas of a commercial  
4 building, and as you can apply it to your industry, you know, they look at the concerns of the bathrooms. Those  
5 studies, I think just got released yesterday. We were privileged to those studies about six weeks ago from the  
6 Department of Homeland Security. Now, there are areas lobbies, and other areas, the back of house operations.  
7 Specifically, the EPA does not have a specification for soft porous surfaces, but they've found that the virus can  
8 collect in sheets and bedding and couches and so forth. And if you whip these up in the air, the virus goes back in  
9 the air. Another area that they mentioned was elevators. One of the problems with an elevator just as an example, is  
10 that if there's a perfectly cleaned elevator that is cleaned with the EPA's N list products, the N list only applies to  
11 hard surface cleaning.

12  
13 Monona Rossol, MS, MFA 2:24:53

14 Yes.

15  
16 Etienne Grignard - Managing Director 2:24:56

17 It does not apply to air treatments, it does not apply to soft porous surfaces and so forth.

18  
19 Monona Rossol, MS, MFA 2:25:01

20 Right

21  
22 Etienne Grignard - Managing Director 2:25:02

23 So if you go into an elevator and let's say you go to your set and you completely sterilize it with the different  
24 products that are out there, as of right now, the second somebody walks into that space who is shedding - that's the  
25 that's the term for being contagious. So somebody is experiencing viral shedding at that point in time, and they walk  
26 into the elevator and they talk, cough, sneeze, and so forth - the problem becomes that that elevator is now  
27 considered a hotspot for anywhere from three to six hours.

1 Monona Rossol, MS, MFA 2:25:33

2 Yep

4 Etienne Grignard - Managing Director 2:25:35

5 Excuse me? So that's where the problem is. The studies that have now been done by Grignard, which have been  
6 done by numerous scientists, and are being validated, and as I mentioned, some of the different institutions that  
7 we're currently working with, I can show you one of those studies and it will explain to you the effect of humidity  
8 on the virus as well as the effect of the Grignard pure, which is an atmospheric haze, which actually referred to as an  
9 air treatment. Grishma, if you're there, can you please pull up the MicroChem study? Just because I've had such  
10 difficulties with sharing?

12 Grishma Desai, ASQ, PMI 2:26:13

13 Yes, I'll share this study

15 Etienne Grignard - Managing Director 2:26:16

16 And just go to the last page because this is this is the science This is not opinion. This is the science. This is the way  
17 that people are. Now looking at it. This is how we check for airborne virus transmission, which is now the leading,  
18 which now the CDC, the people that we speak to from Harvard and everywhere else have mentioned as the primary  
19 cause of the disease.

21 Dave Perkal, ASC 2:26:45

22 And while we're waiting for her to pull that up, I have a quick question, how small an amount because Cynthia  
23 brings up a good point how small an amount, would your like, if, if TEG works as a antimicrobial - and if this works  
24 as something to kill a virus, you know, which we would just like to have it work as just smoke that we can continue  
25 our jobs, how small and amount ? Because there's a lot of times when we're lighting the set where we don't want to  
26 have any atmosphere or the presence of atmosphere because it It reveals where our lights are.

28 Etienne Grignard - Managing Director 2:27:17

1 I will address that question right after I explain this chart that we sent. So please remind me to come back to this but  
2 I will explain this chart. If you look at this chart here, this is a viral study Grishma may need your help on some of  
3 this. So what they do is they take a surrogate the MS2 biophage, the surrogate of an MS2 biophage is that it's  
4 actually a virus that's infected with a - it's a bacteria infected with the virus to understand the terms of what we're  
5 mentioning, is that an enveloped virus is one with the protein shell around it. When you use a biophage, you actually  
6 put that virus inside a bacteria you cannot kill, you cannot kill a virus, a virus is not alive. So what you do is you  
7 inactivate a virus, you kill a bacteria, you inactivate a virus. So what was done is that again, we went to the top  
8 testing lab nationally, recognized by the FDA, the EPA with to run the science, not opinions, this is all science. So  
9 when we ran it, you first take the chamber and you put in the number of plate forming units - Grishma can you  
10 explain those - How many virus colonies is that?

11  
12 Grishma Desai, ASQ, PMI 2:28:37

13 Okay, so in the baseline chamber, which is the control chamber at time zero when the virus was introduced into the  
14 chamber, you have around 14,000 plate forming units of the virus. After an hour, they're measured again at three  
15 replicates, and you come down to 1,920 plate forming units. So a log reduction to show the reduction in the number  
16 of viral particles within an hour's com- is calculated by the difference from the first hour to time zero. As you can  
17 see in the baseline chamber, it ended up coming down to 710 plate forming units. And then they ran a second um...

18  
19 Etienne Grignard - Managing Director 2:29:19

20 I'm sorry, Grishma, I'm just going to interrupt. But after one hour, it came down to a log 0.88 reduction. Now the  
21 baseline unit for everybody to understand is this is running at 50% humidity. So by turning up your humidity to a  
22 level of 50%, you actually get a log reduction of 0.88 and the amount of viruses that are inactivated, that is by  
23 humidity. So Dave, that's the answer that you asked before. A lot of testing has been coming out what Grignard was  
24 able to prove here is that by just turning up the humidity in the room, we're able to do a substantial decrease. What is  
25 interesting about that - and I apologize Grishma - but when we tested the Grignard pure, which is not straight TEG,  
26 in fact, straight TEG did not have the same effects - and I think that's because of the - and now again, I will always  
27 clarify if I'm telling you about a scientific hypothesis as opposed to a scientific fact as opposed to an opinion. So the  
28 scientific hypothesis is that we have these particles in the air, and as the particles are in the air, and they do contain



1 water in them, the water evaporates much faster than the glycol and when you have that effect occurring, it  
2 evaporates the glycol a little bit faster. But what was interesting is that we pulled the first sample at 10 minutes.  
3 Okay, so when one hour humidity got a 0.88 log reduction, that's the number of viruses that were killed - in less than  
4 10 minutes we inactivated all of the viruses - to the degree where they were below recordable limits, we had a log  
5 reduction of 3.12, which means that we had a 99.9% reduction. Now at the current time with our efforts that are  
6 moving forward with, as I've mentioned, the sporting industry, the professional sports, professional entertainment,  
7 with DOT's with commercial buildings and so forth - this was a remarkable result. It's it's much, much farther along  
8 than Harvard have done Jack Spengler got to or Theodore Puck, although Theodore Puck who is pretty much the  
9 godfather of microbiology, just for your own reference, the name Puck to microbiology would be the same as  
10 Einstein to physics, Grignard to chemistry and so forth. With that stated, we do have an independent engineering  
11 group, it consists of about 20 different individuals, they are all at the top of their field. They all do this on volunteer  
12 work, they are looking at systems in order to open the country safely. And the first question they asked us, Dave is,  
13 hey, that results remarkable, can you please figure out what does it do in one minute? What does it do in 30  
14 seconds? And how light can we go? So as of right now, there's currently testing underway to see if this viral  
15 inactivity that it's being able to do, can immediately kill the virus, because the effects of that could eliminate social  
16 distancing guidelines in different areas. Now, I'm not saying that we're eliminating social distancing guidelines, but I  
17 can tell you that an advisory committee is being formed with representatives of OSHA, EPA, FRA, CDC and a  
18 whole bunch more of alphabet soup, to take a look at these types of results with this material. Grishma if you could  
19 unshare this that would be great, but I can open that up for questions because you can see the effect of humidity, and  
20 then you can see the effect of this material.

21  
22 Dave Perkal, ASC 2:33:03

23 Okay, I'm gonna I'm going to go through the list here because there's a number of people that have been waiting  
24 quickly - just to round that out, like which corporations and sporting events and have been looking at you using  
25 this ?

26  
27 Etienne Grignard - Managing Director 2:33:16  
28

1 There's approximately 6 DOTs, they include everybody from Amtrak to Maryland DOT to the Vermont DOT  
2 system and so forth. This is for buses, as well as for trains - that engineering efforts been spearheaded by Luminator.  
3 In New York, there's several different places, Boston Properties is one, for instance, that are looking at this  
4 technology for the protection of their offices. In terms of sporting teams and so forth, that would be Major League  
5 Baseball and with discussions starting in several other areas as well. I know that there's a big discussion that's going  
6 on with the live entertainment events. One of the big discussions that are coming on is yes, we can open up live  
7 entertainment, but here's the problem: there is no regulations, there's no laws on liability in those markets, and  
8 because of that, they are all afraid until something comes up - and you can see this with the different campaign  
9 rallies that are going on, is that they want people to sign agreements saying that they will not sue the campaign rally  
10 if they get COVID-19.

11  
12 Dave Perkal, ASC 2:34:24

13 Right. So It'll take rock & roll out. Okay, I'm gonna go to Eric Steelberg.

14  
15 Eric Steelberg, ASC 2:34:31

16 Hey, guys, thanks a lot. Lots of information to distill. I have a two part question if you don't mind. First part is:  
17 does the the way the atmosphere is produced, ie the machine used have any effect on any of these results?

18  
19 Etienne Grignard - Managing Director 2:34:50

20 That's that.

21  
22 Eric Steelberg, ASC 2:34:51

23 Second part of the question is just trying to like really distill it down to the level of risk because it seems like we're  
24 talking about two things today. We're talking about just the safety of smoke and atmosphere in general. And then the  
25 safety of it in Covid with Covid present, what just - I guess this would be for Dr. Jordan Esposito [sic] - In your  
26 opinion, what is the relative safety or risk of being in and out of a space filled with, you know, say 30 minute  
27 periods of atmospheric light atmospheric smoke compared to working, say a day on a busy city street with pollution  
28 from vehicles and things like that and say, like New York or Los Angeles?

1  
2 Dr. William Esposito, CIH, Dr. PH 2:35:46

3 Um, I, well I - From what I've been working on with TEG, and what Bill has been talking and talked about with the  
4 studies that that we've been finding I don't think it's it is as hazardous as walking on the streets in New York City,  
5 which you have a lot of different dusts that you're being exposed to those construction dusts and some of those  
6 things that that I was showing that are toxic dusts. So based on what my research so far, I would say there is less of a  
7 hazard. I just wanted to clarify something for Cynthia and everybody and and forgive me I, I live in the world of real  
8 estate and we've been also living in the world of transit. So when I said the HVAC systems and things like that, I  
9 wasn't thinking about cinematography, I was thinking about elevators, locker rooms, these short and train stations,  
10 buses, things like that. That we're going to have to be in for a short period of time and there is no way to socially  
11 distance. So that's why I said, we're looking at using the air, the central air systems to deliver this. And like Etienne  
12 said, our next step is, okay, we've got 100% kill at 10 minutes at concentration x, let's get it down to what can we do  
13 at one minute and then that concentration way, way, way lower right so that you hardly even know it's there. So  
14 that's what we're going to try to get to in elevators, and lobbies and buses and things like that, and I'm not looking at  
15 this from an art standpoint. But we're looking at less is best for for every many reasons. But for you guys to have  
16 your artistic effect that it's a little bit of a different situation. Bill, you want to add to that?

17  
18 Bill L. Jordon - EPA 2:38:01

19 The fog versus haze question, which was the first question I think the - we don't have the data yet to characterize any  
20 differences in terms of antimicrobial efficacy, but intuitively, the more you use the more efficacious the more  
21 effective the product is. So I would expect that, at higher densities and with perhaps better dispersion of the aerosols  
22 that there would be improved efficacy. And I agree with Dr. Esposito that the ideal approach is to figure out the least  
23 amount one can use for the antimicrobial effectiveness and figure out if the time course for producing the desired  
24 level of viral inactivation.

25  
26 Eric Steelberg, ASC 2:39:05

27 And then just a question about the machines if you would, maybe Etienne?  
28

Etienne Grignard - Managing Director 2:39:09

Okay, I can answer that. So... well, the short answer is that we're currently that machine was done with the Chauvet 1800 machine that is a fog machine. We understand that the particle sizes are different. We have a lot of data on those particle sizes. We're currently testing the the haze machine, the stadium haze, and we're testing the fog machine at two additional levels, and then I believe Grishma, we have two additional tests that are going in. We're testing them at lower concentrations. But the question that's coming up is, what is the difference on micron size with the virus we know that the virus is between 40 and 120 nanometers in diameter or in size, we know that the particles for the fog machine have a much wider spectrum than the haze machine. There's some theories either way, when it comes to being able to utilize this product as an antimicrobial - I cannot I can tell you right now with Chauvet 1800 fog machine or with the fog machine, it's extremely effective as you've seen in those third party test results. We are currently underway with the other testing. I will tell you that when I talk to this engineering group, because I'm sure when I show them the next round of data, they immediately ask me, or they ask us, for more data because they're trying to put these systems together - but once we get that next round of data, we will know definitively what the difference in efficacy against the virus is, whether it's with a haze machine or with a fog machine - and then we are also going to test it with varying types of these machines, because we want to see if the efficacy is directly related to that density chart that was shown to us before by Grishma. Part of the reason for that is that a national rollout of this is that there's simply just not enough machines. We have a Grignard Pure presentation, which I'm not going to get into, because this is not the correct forum for it, but when we talked about a national response and trying to protect our schools and things of that nature and areas of necessary social congregation, there's simply not enough equipment. So equipment would have to be repurposed. And in the country, there's a hell of a lot less haze machines, but haze machines, for the most part are atomizers - so when we look at, for instance, Coachella, and when we look at these outside live environments, we almost have to go to a misting type of system, and those misting systems can only be handled with atomizers. So to answer your - that's a lot of words - to answer your question, we're testing it right now with an Amhaze hazer and we have all the particle information there and sizes of it. We are also testing it with another fog machine to see if a low like a cheap fog machine would work as well. Because in those environments, if somebody was quarantining, or if somebody had COVID, and they became into the shedding stage, well, then you could put a little fog machine in there, but we will not make any claim until we have third party verification. Anything that we do, we always bring back to the science. And we look at the science, we look at the

1 facts, but our company just by the nature of our company, we don't even make claims based on our own. All of our  
2 claims have to be third party certified by by experts in that who have the appropriate certifications. Is that a long  
3 winded answer for you, Eric?

4  
5 Eric Steelberg, ASC 2:42:49

6 Uh, it is, but it's, it's full of relevant, pertinent information and I will look forward to hearing what data there might  
7 be with the kinds of machines that are more typical to the, you know, environments that we work in, you know,  
8 because I don't I don't think those you mentioned are seemed like more venue type things versus, you know, smaller  
9 environment type machines for us.

10  
11 Etienne Grignard - Managing Director 2:43:16

12 Correct. We've shot the particle size on several different haze machines, and the particle size on the haze machines,  
13 all are in a certain range, and we've shot it on the high end fog machines. So that's in another range. The fog machine  
14 range actually goes, encompasses the haze machine range in terms of particle sizes. So we will get that data because  
15 you can imagine if people are going to go into an elevator, let me go back to the elevator analogy. Right now you  
16 walk into an elevator where somebody has shed, it's a hotspot. Would you feel more comfortable walking into that  
17 elevator to go up to the 86th floor if there was a haze in it and to work what level of haze would you feel  
18 comfortable? And that's what's trying to be determined as of right now.

19  
20 Eric Steelberg, ASC 2:44:06

21 Thank you.

22  
23 Dave Perkal, ASC 2:44:07

24 Thanks, and now Bill Bennett, ASC

25  
26 Monona Rossol, MS, MFA 2:44:09

27 But it's got to be EPA registered. Come on.  
28

1 Dave Perkal, ASC 2:44:13

2 Yeah, I think I think that we're all agreeing on that.

3

4 Etienne Grignard - Managing Director 2:44:16

5 Miss Rossol, I can address that. And I'm going to go back to the facts and what we're doing as of right now. When

6 you mentioned EPA registered, there is no EPA definition for an air treatment. Just like there's no EPA definition for

7 a soft, porous surface. There are people right now looking at this from the EPA. But when you keep referring back

8 to the EPA N List, you understand that the EPA's registration for disinfectants, is only for hard surfaces. That's it.

9

10 Monona Rossol, MS, MFA 2:44:58

11 Okay. Do you have an establishment number then?

12

13 Etienne Grignard - Managing Director 2:45:02

14 Yes we do.

15

16 Monona Rossol, MS, MFA 2:45:02

17 Going that route, then would you send that to me please?

18

19 Etienne Grignard - Managing Director 2:45:08

20 That would be fine. But may I ask what is your purpose?

21

22 Monona Rossol, MS, MFA 2:45:12

23 My purpose is to make sure that if anything is done on any set that it is done in accordance with the regulations.

24

25 Etienne Grignard - Managing Director 2:45:22

26 I will I will mention this to you

27

28 Dave Perkal, ASC 2:45:25

1 Etienne if I could just have it for a second I'm gonna let you guys take that on the sidebar and work out if you want  
2 to send her the number or not.

3  
4 Etienne Grignard - Managing Director 2:45:31

5 Okay, appreciate it but I would like to just address that because it goes back to our company's integrity. As of right  
6 now, I can sell you a product as a lighting effect that has all the health and safety standards that we discussed. All  
7 the health and safety standards that we discussed, go down to the science. Grignard Company will not sell this  
8 product unless we have the proper the proper certifications. As of right now, the EPA has acknowledged that it has a  
9 shortcoming. The EPA, right now we are in discussions with - as we talk to the EPA, they want to know who's  
10 interested in the product to protect their people. We've had outreaches from the different organizations that I've  
11 previously mentioned. So you can't buy Grignard Pure right now. We can't sell it to you. It would be illegal for us to  
12 sell it to you.

13  
14 Monona Rossol, MS, MFA 2:46:32

15 Good. You also mentioned that it was not pure TEG what else is in it?

16  
17 Etienne Grignard - Managing Director 2:46:44

18 Monona as of right now, I don't think I'm going to be sharing the secret sauce. However, I can tell you that it's only  
19 the ingredients that have health and safety backup.

20  
21 Monona Rossol, MS, MFA 2:46:53

22 Wheeeeeew

23  
24 Etienne Grignard - Managing Director 2:46:54

25 Excuse me?

26  
27 Monona Rossol, MS, MFA 2:46:57

1 (Laughter ) Um yeah. Well, you We have a, we we have a bias in that we want to know what it is we're breathing.  
2 So I mean,

3  
4 Etienne Grignard - Managing Director 2:47:08

5 Monona excuse me, I'm sorry, I want to take this back to the science, I'm gonna trust

6  
7 Monona Rossol, MS, MFA 2:47:12

8 Science shmience. [Editor: shmience ?]

9  
10 Etienne Grignard - Managing Director 2:47:13

11 [garbled] and safety. I've heard a lot of opinions today that have not been supported by science I'm being very  
12 respectful. So please, I would, I would ask that you show the same.

13  
14 Dave Perkal, ASC 2:47:24

15 Okay, guys, I'm going to I'm going to go into another question. And I'm going to go to Bill Bennett, ASC .

16  
17 Bill Bennett, ASC 2:47:28

18 All right. Hello, guys. I kind of came to the discussion a little bit late, so excuse me if this has already been covered.  
19 We, I saw a lot of information about various glycols and that there's evidence that the levels that we use for fogging  
20 in the motion picture industry are well below the safe levels for people to be in that environment for extended  
21 periods of time. So I wanted to ask Mr. Grignard if we were to use Pure if it eventually becomes legal to sell to us to  
22 do the fogging and that it and also had the added advantage that while we were using it, it would also be neutralizing  
23 the virus - could people live work in that environment and we tend to use fogs, which I'm guessing now from the  
24 discussion of light to medium. It's rare that wherever like doing something where you can't see 10 feet, it would be  
25 pointless to do that on a motion picture set for most of our applications. So assuming that we're doing light to  
26 medium fog, could you work say a 10 hour day in a light to medium fog of Pure and it wouldn't be detrimental to  
27 your health?



1 Etienne Grignard - Managing Director 2:48:38

2 As of right now, the Safety Coordinators that those entities that I mentioned are actually looking for at least a 12  
3 hour day, but I can defer that to Bill Jordan.

4  
5 Bill L. Jordon - EPA 2:48:53

6 Thanks Etienne based on everything that I have seen both my own analysis and then the work that has been done by  
7 government agencies, exposures for multiple days, eight to 10 hours a day would be safe.

8  
9 Bill Bennett, ASC 2:49:14

10 All right, thank you very much. Thanks Dave.

11  
12 Dave Perkal, ASC 2:49:17

13 Okay. Erik Messerschmidt again.

14  
15 Erik Messerschmidt, ASC 2:49:22

16 Yeah, thanks. Thanks, Dave. Yeah My question is for Ms. Rossol um you know, I'm a little bit concerned you know  
17 I just came out with a show where we used extensively a particle counter I'm not I don't know exactly the instrument  
18 that was used but we used quite a bit of theatrical smoke and we are well below the the Time Weighted Averages  
19 that are outlined in the in the documents that are well established in our business - and I think you know, you're  
20 obviously you're well aware of the of the existing... the existing threshold that is deemed acceptable within our  
21 business.

22  
23 Monona Rossol, MS, MFA 2:50:05

24 Yeah

25  
26 Erik Messerschmidt, ASC 2:50:06

27 I don't know that we exceeded 20 parts per million [ update: Erik meant 20 mg/m3 ]. I was quite involved in that  
28 process. And I'm curious specifically, as to your opinion, given the fact that you've obviously been involved in the

1 conversation, given what we've learned today, in terms of your opposition to the use of theatrical smoke, which  
2 which appears to be quite quite direct, if you're in a position to weigh into the relationship between the use of  
3 theatrical smoke as it relates to COVID-19 versus the relationship with the theatrical smoke period, because as as far  
4 as I can tell, your position is that you are, you're opposed to the use of theatrical smoke period, in terms of the use,  
5 it's use on on the motion picture set - and I'm wondering as to the as to your position - as to your ability to be  
6 objective in terms of its use. - as to as to it relates to what is deemed acceptable within our industry in relation to  
7 COVID-19 as opposed to its use period. And I'm just curious if you can, if you can comment on that because it  
8 seems problematic to me, given the fact that you're obviously opposed to its use period.

9  
10 Monona Rossol, MS, MFA 2:51:23

11 Well, I here's here's my my druthers, I just assume people breathe air, we know that air is okay. And we do know  
12 that there are some people who are allergic to it. Some people who have sensitivities, I have asthma too. So I'm  
13 aware that some people are triggered by it, others are not you may not be, but basically that would be ideal.  
14 However, I want the particle counter there because I support the ANSI standard levels, in in in the absence of  
15 anything else. So if you have a particle counter and you're making sure that you're below 40 micrograms per cubic  
16 meter for a peak and 10 micrograms per cubic meter for a time weighted average. [Editor: industry safety limits are  
17 set to a much higher level of 40 mg and 10 mg peak, respectively. If Rossol supports ANSI standards then she  
18 supports the 40/10 mg limits, not mcg] And, and it is an eight hour standard. And if we work in 13 hours, then there  
19 is a special formula for removing that and it's not a ratio as we have seen in the AMPTP bulletin, but it's a different  
20 formula, than I am I am, I am for that. So I that's my priorities because I have seen effects. I have seen people  
21 injured. I have seen asthmatic attacks caused by it. And I just think we should do no harm when we can.

22  
23 Dave Perkal, ASC 2:52:46

24 Does that answer your question, Erik?

25  
26 Erik Messerschmidt, ASC 2:52:50

27 Yeah, Yeah, it does. Thank you.  
28

1 Dave Perkal, ASC 2:52:54

2 Rodney Taylor, is your hand still up, do you have another question?

4 Rodney Taylor, ASC 2:52:57

5 I do. Yeah. Can we go to more of a practical set for a moment I'm on a show in Richmond Virginia that wants to go  
6 back and shoot at the towards late July. We know it's going to be hot. You know norm I heard mentioned earlier  
7 about not working with small portable air filters and things like that. If we go to a practical location at that time of  
8 year we would have air conditioner. You know, brought in, we use some smoke sometimes. The stage that we have  
9 there is just a warehouse with tubes running through for air conditioning. What is that scenario like? If anyone  
10 would like to comment. How about if I really asked a specific question?

12 Monona Rossol, MS, MFA 2:53:48

13 If it was me I'd be walking around with volometer watching where the air goes I'd start doing some you know, it  
14 depends. You can't know without actually seeing the site.

16 Dr. William Esposito, CIH, Dr. PH 2:54:01

17 You might be able to, to actually utilize, it sounds like you got portable units and things you might be able to utilize  
18 local ventilation types of principles and, and piston effect air flows and stuff like that.

20 Rodney Taylor, ASC 2:54:16

21 Yeah

23 Dr. William Esposito, CIH, Dr. PH 2:54:17

24 Because it's an open space, you know, and if you want to go offline, I'm more than happy to tell you how to kind of  
25 line that stuff up so you can get yourself a nice piston effect, which would, which would move the air, you know, a  
26 way away from the people and it's a pretty easy setup, if what you're saying it's an open warehouse and stuff and  
27 you've got the portable fans.

1 Rodney Taylor, ASC 2:54:45

2 Well, yeah, the the one that our stage is a portable warehouse and then otherwise, we're in small rooms, etc, houses,  
3 typical locations, and then we bring in those little air conditioning units with the hose, but maybe the same  
4 principles.

5  
6 Dr. William Esposito, CIH, Dr. PH 2:55:00

7 One hose is taking the water out the other hose is taking the heat out and the other hose is blowing the air in, right?

8  
9 Rodney Taylor, ASC 2:55:07

10 Right.

11  
12 Dr. William Esposito, CIH, Dr. PH 2:55:08

13 So so if you if you have it coming in the one side and blowing out the other side, you can get yourself what's called  
14 the piston effect, which is and that gets to Monona's ventilation efficiency and this ASHRAE stuff, you can move  
15 that air in a piston, think about a piston just pushing the air through the system and...

16  
17 Monona Rossol, MS, MFA 2:55:30

18 Displacement.

19  
20 Dr. William Esposito, CIH, Dr. PH 2:55:32

21 ...right and and that's and you can get a good air exchange rate there and so that's a great opportunity because  
22 because it's it's localized and it's temporary.

23  
24 Rodney Taylor, ASC 2:55:43

25 Okay thank you.

26  
27 Dave Perkal, ASC 2:55:44

28 Okay, Cynthia.

1  
2 Cynthia Pusheck, ASC 2:55:50

3 Okay. Hi, ah, this might be less of a question and more of a statement. I just want to say I really appreciate Dr.  
4 Rossol's point,

5  
6 Monona Rossol, MS, MFA 2:55:57

7 I'm just a plain old industrial hygienist not a doctor  
8

9 Cynthia Pusheck, ASC 2:56:01

10 [garbled] point that we, we all want to know what we're breathing. And many of us who came up back in the days  
11 whether shooting music videos or assisting or, not knowing what we're breathing and having those complications  
12 and and even the last few years I've been on sets where the crews have pushed back whether it's co-DPs and you  
13 hear about another set, crews really push back on long hours day after day, months in in sets that are being smoked  
14 up. So I appreciate what you're trying to say, which is we all need to know what we're breathing and, and have some  
15 good standards. We don't want to lose the art of it. But we can't also go back to having having mixtures we don't all  
16 trust what we're breathing. So I really appreciate what you are trying to say.  
17

18 Monona Rossol, MS, MFA 2:56:52

19 Thank you very much.  
20

21 Etienne Grignard - Managing Director 2:56:54

22 Cynthia, we're in 100% agreement with you according to EPA regulations once this product has approval, there'll be  
23 a full time disclosure of all the ingredients right on the on the label. We have no problem sharing that in many time  
24 and we don't have any problem with sharing that with the with the proper... put it this way if you look at a lighting  
25 effects label, there's very little information on. Once this product is classified as a disinfectant or as an air treatment,  
26 all formula informations is on there all safety informations on there, this is in full disclosure. Grignard Company has  
27 been in full disclosure with numerous agencies at this point. We've been in full disclosure with all of the entities that  
28 I mentioned before. The product is currently in a patent pending mode. I will tell you it is utilized as a lighting effect

1 currently. The problem is is that it's we market through OEMs that we do work for currently. But there will be no  
2 secret sauce comments, so to speak upon approval. And you will have 100% information. In fact, because we are  
3 trying to get to a level of a very light haze, all areas that would actually have the product we would have marked  
4 with the label that would simply state you know, protected by Grignard Pure. Because one thing to bear in mind is  
5 that as of right now, the air is not safe.

6  
7 Monona Rossol, MS, MFA 2:58:23

8 No, it's not.

9  
10 Etienne Grignard - Managing Director 2:58:24

11 And we're in hotspot Mona, Monona. I believe you're in New York. We're in New Jersey. I mean, for me, not to  
12 mention five people that I know that have passed, including my father. That's the effect that we have right now. And  
13 I can tell you right now, part of the studies that they're looking at is how do we protect these people in nursing  
14 homes?

15  
16 Cynthia Pusheck, ASC 2:58:48

17 Yeah, I wasn't implying that you weren't telling us I was just implying that we get back on sets, we already had  
18 pushback earlier from crews and so it really is important for us to all know and trust what we're using, because if our  
19 crews push back we need to believe in something right?

20  
21 Etienne Grignard - Managing Director 2:59:06

22 Oh, yeah, totally correct. So one of the studies that are done is the study by Intrinsic which is done by their lead  
23 toxicologist, they have about 400 years of doctorates, that all they do is study toxicology. So every product, and the  
24 problem is is that you understand we make it for everybody else. But when we make it for everybody else, we're  
25 always concerned about liability and things of that nature. So, that's why we go out to the third party verification,  
26 you may want to ask your, your supplier, hey, is this made by Grignard, because if it's made by Grignard, you will  
27 get a certificate of analysis that's run by Grishma's team. And there's always a document right behind that. That's a  
28

1 third party evaluation for health and safety. We were we don't have a secret so to speak, the only reason that I've  
2 mentioned the secret sauce before is because this product currently is in a patent pending mode. So.

3  
4 Dave Perkal, ASC 3:00:07

5 Thank you for that. And now we're going to go to Eric now.

6  
7 Erik Messerschmidt, ASC 3:00:13

8 Thanks Dave yeah I'm just curious as to... I mean everybody in the panel this is directly to everybody, considering  
9 the fact that I, I assume all of the anxiety related to atmosphere, smoke, atmospheric smokes potential to spread the  
10 virus is related specifically to the fact that we can't at at present control or regulate the potential that somebody on  
11 the movie set is in fact infectious. And, and I'm curious as to the the panel's collective temperature in terms of that,  
12 that comfort level, whether or not we should in fact be working period, given the fact that there, there's a tremendous  
13 risk, you know, irregardless of smoke, you know, every everyone on the panel here has has significant scientific  
14 knowledge that exceeds all of ours. And I'm curious, it just seems to me at at present to be very uncomfortable as  
15 your ability to kind of judge the risks. And I'm wondering if anyone has any opinions. As to that.

16  
17 Monona Rossol, MS, MFA 3:01:38

18 You've hit the actual issue here. There is no safe workplace and there will not be until there's a vaccine. Now we can  
19 make it safer. We're working at every single way we can think of to make it safer with distancing and masks and all  
20 that but there is no guarantee once you are in the presence of other people, we really can't say for sure. And that's the  
21 decision that every single person has to make.

22  
23 Dave Perkal, ASC 3:02:08

24 So just just to add on to that Monona, just so we're really just facing when you break it all down, since there is no  
25 safe place, and we're going to all go back to work anyways, is the use of the smoke products, which are currently  
26 approved for use on our sets at the levels that we use them... does that increase the transmission of COVID? You  
27 know, because I think we're all just thinking to ourselves, because if it doesn't, then why are we limiting it? Are we  
28 limiting it because psychologically we could see the air now and we go, oh the air's around us and I know it's a it's

1 an air virus, you know, is this something that we should eliminate? And then the other, the other question is, is how  
2 do you you know, because the new rules in The Way Forward, all of the unions have come up with the same thing  
3 that we're going to have a an autonomous safety officer an HSS on set, who can make determinations whether  
4 somebody is showing signs of COVID, or whether they're not showing signs of COVID, and whether things are  
5 practiced normally. So I guess what we really want to do is just get down to the brass tacks here and find out is  
6 smoke, the atmosphere that we use at our legal levels that we have been using to make our movies... is this is going  
7 to exacerbate an infection of COVID. Or does it have a nil effect?

8  
9 Monona Rossol, MS, MFA 3:03:25

10 I'm going to say yes, and I'm going to say yes, for this reason. And that is that we have seen those studies, the  
11 Moline study, there's also one up in Vancouver, there's a number of them, and the FDA's pronouncement on the fact  
12 that these are irritants regardless of what everyone else seems to say here, that is a fact these do cause it not  
13 everybody but most people have some irritant effects. And if you are irritating the respiratory tract, you are setting  
14 yourself up for also, the being more vulnerable. So, in that instance, I just think we should not be playing with it  
15 until we absolutely know that it is not a risk factor. We can talk about all these things and talk about killing the virus  
16 and all the rest. But some people experience respiratory and eye irritation when there is fog, and that is not a good  
17 combination with a virus that can land on [garbled]

18  
19 Dave Perkal, ASC 3:04:29

20 Right. Right. But we also know that the Moline report, which is good in a lot of ways, but we also know that they  
21 conflated the use of oil with glycols...

22  
23 Monona Rossol, MS, MFA 3:04:39

24 Yeah.

25  
26 Dave Perkal, ASC 3:04:40

27 [garbled] ...from other uses and there is no way to separate that and all of us recognize that oils are bad. I mean, I  
28 was on set of a Whitesnake video...



1  
2 Monona Rossol, MS, MFA 3:04:48

3 Then I'll send you a glycol study from up in Canada.  
4

5 Dave Perkal, ASC 3:04:50

6 Well I'm not done with my question yet though, but if I could just read from the Moline report in quotes, "there was  
7 no clinical significant adverse effect on pulmonary function due to...  
8

9 Monona Rossol, MS, MFA 3:04:50

10 Well pulmonary function is a big difference.  
11

12 Dave Perkal, ASC 3:04:53

13 [garbled] Well, no, chronic...  
14

15 Monona Rossol, MS, MFA 3:04:56

16 No pulmonary function is a whole nother thing. Pulmonary function is not what I'm talking about. I'm talking about  
17 a transient irritation of the respiratory upper respiratory tract, which has been seen in many, many, many studies.

18 And FDA is not looking at mineral oil, they are looking at glycols and glycerin and they are listing them as  
19 respiratory toxicants.  
20

21 Dave Perkal, ASC 3:05:31

22 I guess just to break it back down, to my point is that you're citing the Moline report. Then you cite the Moline  
23 report, but the Moline report it combines oil and...  
24

25 Monona Rossol, MS, MFA 3:05:42

26 Okay let's forget it, look at the other ones.  
27

28 Dave Perkal, ASC 3:05:44

1 No, no, no. So, So then, if you look at the SHAPE report was the University of British Columbia. They specifically  
2 talk that there's even a higher preponderance of oil in their study versus glycols, even above what's legally allowed  
3 in that region of Canada, and that they call it a "home brew". With that more of the people in the study more the  
4 theatrical special effects guys were using their own special home-brew. So if we're if we're using the result that  
5 there's chronic or there's irritants or creates an irritant at all, but we don't know what the substance was, in fact, and  
6 it's a substance was included, that was over 50% of preponderance was mineral oil at the time, and we know that we  
7 don't use mineral oil now, how could we preclude that the sources that we use now still are the cause of that  
8 irritants?

9  
10 Monona Rossol, MS, MFA 3:05:55

11 Because there are some separation between the glycol and the oil mist. You also mentioned the Froggy Fog people I  
12 mean, I was one of the experts retained in that lawsuit against them. So there that was not that was a glycol fault.

13  
14 Dave Perkal, ASC 3:06:58

15 Right. So So, it's quoting from the from the SHAPE report, which is, which is the one that you used in your last  
16 report, which is on top of the Moline Report and, quote "nearly half of the technician sometimes formulated their  
17 own fluids or brews". This is SHAPE report section 9.1.1 page 85. The overall average measured in this study was  
18 nearly identical to that in the Sinai-Environ Study that's the Moline Report. Though this study found almost no  
19 difference in the average levels of the two fluid types the total amount in the fluids type, but the SHAPE Study  
20 found a considerably greater range and exposures for mineral oils. So rather than eliminating mineral oils in your  
21 reports as you start to build them from from Moline to UBC, a 2016, UBC 2019 with the SHAPE Report in the  
22 middle, where you're adding more mineral oil in the report, and to me, I would conclude that mineral oil could be  
23 the reason for an irritant like I feel irritated with this mineral oil, you know what I mean. But there's no report in any  
24 one of those reports that delineates and separates mineral oil from the glycols. What do you say about?

25  
26 Monona Rossol, MS, MFA 3:07:46

27 (garbled) the they... when when we were going through all of the "nikah" [sic] and the NIOSH data there was not  
28 always mineral oil in all of those.

1  
2 Dave Perkal, ASC 3:08:24

3 Well, let me let me clarify again for you going from the SHAPE Report in quotes, "the average personal mole...  
4

5 Monona Rossol, MS, MFA 3:08:29

6 (interrupting) yeah but not the SHAPE re... let's let's look at the not NIOSH report.  
7

8 Dave Perkal, ASC 3:08:32

9 I know but but but the SHAPE report is your report you use the SHAPE report in your last 2019 "829" - and in  
10 quotes from your report, "the average personal mineral oil mist exposure in this study exceeds the proposed ACGIH  
11 TLF TLV for mineral oils at the level requiring an exposure plan for severely refined oils" and according to the to  
12 the British Columbia WCB regulation, it exceeded the standards set by the movie and television productions. But  
13 none of the glycol samples exceeded the current eight hour glycerin mist standard. So when you look at...  
14

15 Monona Rossol, MS, MFA 3:08:34

16 But they found irritation in each one of the, the populations.  
17

18 Dave Perkal, ASC 3:09:22

19 No, no. So that's that's the SHAPE documents section 9.1.4, page 87. So what we're looking at here is, is I'm finding  
20 a tough way to kind of separate all these components, right? Because there is as I look at the table, there's some  
21 components that look like they're safe, and some components which I would never use, you know, I lived through  
22 those days. I don't want to go back to those days. And we're looking for a way as cinematographers to go, what  
23 component can we use that has been tested safe - let's separate the two if you're mixing salad dressing together, you  
24 know, is it the oil or the vinegar that's causing it to react that way, and just use the products that's safe. So,  
25 something to think about, I mean, I'm just pulling it from your reports, so.  
26

27 Monona Rossol, MS, MFA 3:10:10  
28

1 Yeah, well... I have to go back to reading all of my report. But I, um... I know there are some studies that look at  
2 throat irritation with just the glycols and glycerin. So I know that it is, and I know that FDA definitely is listing it as  
3 a respiratory toxicant. So, you know, if you're going to look at those, and that's an inhalation route. That's the other  
4 thing when they when you keep talking about there's all kinds of data that is not by inhalation, and that's the only  
5 route that you give a damn about it - and in that case, there's just very little data for it for these chemicals.

6  
7 Dave Perkal, ASC 3:10:52

8 Well, actually, the SHAPE Report is a study and the Moline Report is a study about theatrical productions using  
9 atmosphere.

10  
11 Monona Rossol, MS, MFA 3:11:00

12 Yeah of course.

13  
14 Dave Perkal, ASC 3:11:01

15 So So there they actually are...

16  
17 Monona Rossol, MS, MFA 3:11:04

18 Those are... Those are not what I'm talking about that what I'm saying is they said there's all kinds of toxicological  
19 data - those are epi studies. If you were looking for toxicological data and you go to the safety data sheet and you  
20 look at the 10 standard tests, you will see that for for the the eight, nine chemicals that are used for theatrical fog and  
21 smoke, there is extremely little data.

22  
23 Dave Perkal, ASC 3:11:29

24 Right. Okay, so...

25  
26 Bill L. Jordon - EPA 3:11:30

27 Mr. Perkal? Bill Jordan here. I don't know why the safety data sheets failed to identify the studies that have been  
28 done on some of these compounds, but the EPA documents very thoroughly keep track of all the different toxicity

1 studies by inhalation route and other routes, to show that these chemicals TEG, PG DPG have been extensively  
2 tested, and the conclusion of - EPA at least - is that the toxicity profile by the inhalation route is very well  
3 understood.

4  
5 Dave Perkal, ASC 3:12:20

6 Yeah, and to your point, like if we look back at the Sinai-Environ Report, which is the Moline Report, and we look  
7 at those footnotes and we go back and we find the study for which that footnote was developed, it says by inhalation,  
8 this is an inhalation test that they did and...

9  
10 Monona Rossol, MS, MFA 3:12:36

11 (interrupting) That's an epi study.

12  
13 Dave Perkal, ASC 3:12:38

14 It says it says I'm just quoting from the...

15  
16 Monona Rossol, MS, MFA 3:12:40

17 (interrupting) You know, I'm just talking about straight toxicity and and the animal tests that we use to evaluate  
18 toxicity (garbled).. not that's not in those studies.

19  
20 Dave Perkal, ASC 3:12:51

21 It's... I'll give you the page numbers and section.

22  
23 Monona Rossol, MS, MFA 3:12:53

24 (interrupting) No no no, it's not in those studies.

25  
26 Dave Perkal, ASC 3:12:57

27 It's in the it's in this Sinai... just let me get my question out, then I'm gonna give it back to the floor. It says in quote,  
28 "by inhalation no adverse effects were reported in rats exposed continually up to 13 months to supersaturated air

1 with TEG vapor at 4 milligrams per cubic meter resulting in an estimated daily dose of about five milligrams  
2 kilogram per day. That's Mt. Sinai Report page section 2-9 section B. So I was able to just pull that up and then just  
3 to follow up in the new Way Forward document for which you are the Consultant for SAG, you say, in that  
4 document it points you back to the use of atmosphere should be followed according to the Moline Report. So if  
5 we're supposed to go back and use this and it says that by inhalation there's no adverse effects reported by TEG...

6  
7 Monona Rossol, MS, MFA 3:13:48

8 What is the date on that statement ?

9  
10 Dave Perkal, ASC 3:13:53

11 This is this is from the Moline Report. So this is a page, ah...

12  
13 Monona Rossol, MS, MFA 3:13:59

14 No no no. No, I mean, saying I said, to go back to....

15  
16 Dave Perkal, ASC 3:14:02

17 No. Okay, so let me let me let me clear that up. I'm saying that that you as part of the Committee that came forward  
18 with the Way Forward document and as part of... as a Consultant at that time as a Representative for SAG within  
19 that document. And in that document it says that we can use atmospheric products as long as there's an HSS officer  
20 on set supervising that - and then in the document it says that all atmosphere should be referred back to the Moline  
21 Report, which is the Mt. Sinai-Environ Report for accurate levels. That's what I'm saying when I say, "but you said"  
22 because I...

23  
24 Monona Rossol, MS, MFA 3:14:44

25 I didn't say that but and that's one of the areas that I would disagree with. Remember, I said not everything, we didn't  
26 get everything we want and because I - because Moline herself - I have a letter from Moline saying it should not be  
27 used that way your data should not be used that way.

1 Dave Perkal, ASC 3:15:00

2 Okay, I just want to clarify, because I saw your name on the title page, that's all. So now we're going to go to... sorry  
3 about that. We're going to go back to a let's go to Craig please.

4  
5 Craig Kief, ASC 3:15:14

6 Thank you very much. I was just curious because SARS-Cov2 is a nasty micro organism. It has he... but there are  
7 loads of other nasty micro organisms out there in the world. And I was just wondering, has it ever been shown that  
8 haze transmits any of those?

9  
10  
11 Eric Steelberg, ASC 3:15:40

12 Great question.

13  
14 Monona Rossol, MS, MFA 3:15:43

15 No answer.

16  
17 Bill L. Jordon - EPA 3:15:48

18 I don't know of anything like that.

19  
20 Monona Rossol, MS, MFA 3:15:50

21 No, I don't either.

22  
23 Etienne Grignard - Managing Director 3:15:52

24 Now we are aware of the other viruses back to Pure testing to the MS2 biophage [bacteriophage ?] is a  
25 representative virus for numerous types of bacteria and other viruses. We've always looked at it on an inactivating  
26 level. We do not know of... So, to the best of our knowledge, we do not know if there's any other viruses that a haze  
27 could spread. And also I do have to clarify, we do not have any data for oil mist, we do not have any data for  
28 glycerin. We do have studies that we've looked at, but we do not have third party testing on some of the other

1 ingredients - and to the best of our knowledge, we do not believe it will spread. However, as I'm saying that is a  
2 scientific hypothesis. We can only speak to the formulation that we have that we have had third party verified.

3  
4 Dave Perkal, ASC 3:16:53

5 Okay, Did that answer your question. Craig?

6  
7 Craig Kief, ASC 3:16:56

8 Yeah, did Thank you.

9  
10 Dave Perkal, ASC 3:16:58

11 Ok Bill Bennett, ASC .

12  
13 Bill Bennett, ASC 3:17:09

14 So some of the - I think it was Erik Messerschmidt, who asked, you know, a very real question of what's it going to  
15 take for people to feel comfortable to go back to work. And that's assuming that all of technology is going to stand  
16 still. Earlier today, I read a report that I had sent to Amy and also Erik, that an Israeli company has developed a,  
17 they're calling it a breathalyzer It looks like a kazoo that you blow into and it yields a result in 60 seconds, and it's  
18 90% accurate. And using tools like that, if we can assure ourselves with 90% accuracy that everybody on set that  
19 we're working with, and then continue to use PPE and stuff like - that, I think we're gonna get ourselves into a  
20 relatively safe environment. And if these tests could be done, you know, as everybody arrives at work every  
21 morning, you could verify that nobody's bringing something into your environment. We all know that Avatar has  
22 gone back to work in New Zealand. And they assured themselves that the entire cast and crew are virus free by New  
23 Zealand is virus free, and the crew that came in quarantined for two weeks and then pass two tests the nasal swab  
24 tests one day after the next before they were released at a quarantine, and they're back at work. So there's ways to do  
25 it. And I think this committee is doing great work towards figuring out how to make the set safer. And I just want to  
26 say that I appreciate the general positive mood of trying to figure out what to do.

27  
28 Monona Rossol, MS, MFA 3:18:56



1 Yeah, the daily testing is really the answer until there's a vaccine.

3 Dave Perkal, ASC 3:19:02

4 Thank you, Bill and Erik again.

6 Erik Messerschmidt, ASC 3:19:07

7 Yeah, I just I'm curious about the - I guess you know - I'm curious about the the general acceptance of quote  
8 unquote "acceptable risks" as they relate to the movie business. I mean, they're they're, they're substantial ones - you  
9 know, be it stunt performers, construction guys cutting MDF and the use of the use of various epoxies as it relates to  
10 fiber and fiberglass fabrication. You know, they're they're, they're obviously getting it in every industry an  
11 exorbitant amount of acceptable risks and associated precautions that that are that are - are relative to those and I'm  
12 curious as to the panel's perception of how that relates to our business in terms of our ability to do our work because  
13 obviously part of what we're trying to establish here is is our general acceptance of what what we can get away with  
14 and, and what what the risks are in terms of our own responsibility in terms of our artistic integrity and our own  
15 responsibilities in terms of our job and Monona you know, you mentioned that the, the, the role to play in in terms of  
16 post production and in terms of achieving certain effects and, and, you know, look, that is a that is a fluid  
17 conversation, a dynamic conversation that is, is obviously financially motivated and I'm I'm just curious as to  
18 everyone's collected opinion as to their our own acceptable risk in terms of accepting the conditions we put  
19 ourselves and our crews under me because as cinematographers we asked a number of people who work for us and  
20 and and perform duties for us to achieve certain things and be in positions that that are in some cases questionable.  
21 So I am curious to poll poll the committee Monona, all, as your own as your own opinions as it relates to COVID-  
22 19.

24 Monona Rossol, MS, MFA 3:21:47

25 You can probably tell that I'm just not for anybody risking their life for anything, but I but it is a personal decision  
26 and and there are people who are going to just say "You know it's worth it to me" and and and I cannot interfere  
27 with that, you know if a person wants to take take a what they consider a reasonable risk, but I'm I just I you know  
28 in spite of the fact that I'm a pain in the tush I really love you all and I mean I really that's my whole motivation it

1 always has been it's my business and you're all part of my businesses the way I see it and I don't want harm coming  
2 to any one of you. Even the ones that right now I'd like to punch their lights out. So I mean, it's just the way I am.

3  
4 Dave Perkal, ASC 3:22:34

5 You'd fit right in to a movie set then because that's how the family works. We're gonna go to David Mullen, ASC.

6  
7 Dr. William Esposito, CIH, Dr. PH 3:22:39

8 Can I just can I just for a second? Erik, are you saying are you saying other exposures like to to epoxy resins and  
9 things like that? Are you just talking about that is... ?

10  
11 Erik Messerschmidt, ASC 3:22:53

12 No, I'm just I'm just acknowledging - No, I think what I'm saying is that there there are known acceptable risks that  
13 we take on as part of participating in this in this line of work, which is one...

14  
15 Monona Rossol, MS, MFA 3:23:08

16 (interrupting) (garbled) He may not... (inaudible)

17  
18 Erik Messerschmidt, ASC 3:23:08

19 Well no, no, no. Let me finish - one one of those is exposure to theatrical smoke. One of those has exposure to to  
20 epoxy resins and we have existing with the assistance of our our partners at the union some some assistance in terms  
21 of how to address those risks and how to assess them and obviously, you know, OSHA has huge part of that, etc. but  
22 but I guess I guess what I'm saying is that in every workplace, particularly a workplace of physical exertion, which  
23 is exemplary a movie sets, there's there's, there are risks that we that we take on and that we acknowledge and  
24 fortunately we live in in this in a situation where we have a we have a labor union and we have societies like the  
25 ASC that assist us in, in assessing those risks and evaluating them. But but but I get I guess, you know, I think in  
26 terms of sort of the greater like what I'm what I'm trying to what I'm trying to suggest is that is that we are in  
27 actuality, taking on tremendous creative responsibility, and, and there are associated risks with that responsibility.  
28 And as cinematographers we are in a unique position of judging that to some extent with the assistance of OSHA,

1 the labor union, epidemiologists, scientists, etc, in judging those risks in terms of how we, how we present those  
2 risks to the people that work for us, and and we have a unique responsibility of addressing that and taking  
3 responsibility of that, you know, and I think I speak for everyone here in terms of like, we we take tremendous  
4 responsibility of that, and are very concerned with the safety and security of everyone within context of what it is  
5 we're trying to create.

6  
7 Dr. William Esposito, CIH, Dr. PH 3:25:21

8 Well, I just want to I just want to say that that we are at a new point in history, and everything about ventilation is  
9 going to be rethought, right? It's not going to be day one stuff. It's going to be over time, but we're going to be  
10 thinking about how we relate to each other how air - it's like Finally, we are going to be looking at ventilation  
11 efficiency. I've been trying to do ventilation efficiency studies for many, many years. So the concerns you guys  
12 have, there's there's a couple of things happening. Particle counters are getting better, vapor counters are getting  
13 better, direct reading, instrumentation is getting better. There's engineering controls that you can if there are hazards,  
14 you know, you need a good industrial hygienist on site to, to design these sets and things that you can minimize all  
15 of those risks. So, so maybe this is the day forward and it's COVID that's pushing us over the over the breaking point  
16 to start thinking about ventilation and, and some of those things, but all of those types of exposures can be  
17 controlled. And I guess you said you've got unions, you've got IH's, you've got OSHA types of groups, but, you  
18 know, you shouldn't be worried about exposures, those those could be controlled with localized ventilation. And you  
19 don't even want to do that PPE stuff, right? Because nobody wants to wear that stuff for very long, but we have to  
20 where now, but unless I'm talking, you know, I don't I don't have a lot of experience on a set, but intuitively to me, I  
21 think you should be able to, with with economically control some of these exposures if it's giving you anxiety and if  
22 you guys feel like you're, you're you're not providing a safe workplace for your employees.

23  
24 Dave Perkal, ASC 3:27:23

25 Thanks, Dr. Esposito. Let's go to David Mullen, ASC.

26  
27 David Mullen, ASC 3:27:26  
28

1 I just sort of tagging on to what Eric saying is that I think what as cinematographers we're just looking for guidelines  
2 from experts to solve problems, and I think, you know, given if there is if there really is an increased spread of  
3 COVID through smoke in the air, you know, what is how to minimize that risk other than a complete blanket.  
4 exclusion of smoke is like, I could, I know when I go back to my show, which uses smoke because it's a period show  
5 and it's set in bars. In the 1950s, and or people are smoking, the first thing I'm going to be asked as well, we're going  
6 to do the smoking post, and then the visual effects person is going to come to me and say, Okay, what if we clear the  
7 set, we only have crew with masks on, we smoke, the setup with no actors in it. And we photograph that as a plate.  
8 So we have a reference to the smoke for the smoke, we're going to need guidelines as to when does this risk level  
9 become, you know, at a practical level that we can do some work in. And I think we're just looking hopefully to get  
10 enough information so that eventually when we do have safety officers on set, they can make sort of calls as to the  
11 sort of subtleties of day to day risk assessment. Because smoke is not going to go away and maybe it will go away  
12 but it just, it's, it's not as easy to just do it all in post as one would think because a shaft of light actually acts as a  
13 bounce card actually lights, backs, bounces like back into the Actors face. So you could add that shaft and post. But  
14 if you're not going to have the effect of lighting the actors face and post. So it's just, we just need some solutions.  
15 And I'm sure this is a moving target, you know, it's going to be different month to month and once once this vaccine  
16 as well. So I'm just hoping that the information keeps coming in so that we can get more and more refined in our  
17 guidelines on set.

18  
19 Dr. William Esposito, CIH, Dr. PH 3:29:29

20 Can I ask, Can I ask a question of where did this concern that viruses spread by smoke come from? because to me it  
21 doesn't. It doesn't make any sense. I don't if that's what the concern is. I don't understand it.

22  
23 Monona Rossol, MS, MFA 3:29:48

24 Yeah, it's the major concern should be the irritation and the fact that the virus is more likely to be a problem from  
25 people who already have an irritated throat But the there are two studies from China that show that they particles  
26 travel on, on pollution on particles.

27  
28 Dr. William Esposito, CIH, Dr. PH 3:30:09

1 But this isn't pollution

3 Etienne Grignard - Managing Director 3:30:11

4 actually I'm sorry, Dr. Esposito, if I could, if I could chime in number one Fox smoke is not a pollutant as defined  
5 and as we went through the definitions before, excuse me, as but what we do know about the fog smoke, not the oil  
6 based I'm talking about the glycol based is that it vaporizes in the air. So that fog smoke, if it's actually attached to a  
7 virus, it's going to vaporize and then it's gone. It no longer remains a particle. I will a you know, kind of my last  
8 comment is that as I mentioned, our company is located out of Rockaway, New Jersey. We are a hotspot our state  
9 has what is it personal over 15,000 deaths at this point 12,000 deaths So we are also a critical use facility, we don't  
10 only make fog fluids, we make a lot of other products as well we make as I stated, We make a lot of products for the  
11 D o t and everyone else. When they close down the state, the state all of our team members how to come to work on  
12 numerous ones of our suppliers that operated warehouses would have somebody that would get infected with the  
13 COVID-19. And when that warehouse got infected, it would immediately go into contact tracing and the entire  
14 warehouse would close down because everybody had to be sent home for two weeks. So what we've been  
15 employing that our company now for the last three, four months, yeah, it's been Grignard Pure in the air. Since we've  
16 employ ed the Grigklnard Pure in the air with all of our team members, which statistically speaking, we should have  
17 had multiple COVID-19 incidences. We have not had one. In fact we have not had an influenza. allergies are down.  
18 We have not had any COVID I mean, they're not nobody's been out sick. So we're not only preaching to you what  
19 we're what we believe to be the solution and what science shows you to be the solution. We're actually practicing it.  
20 And if any of you are in New Jersey at any point in time, we welcome you to come to our facility, we welcome you  
21 to talk to our people. We welcome you to see what they have to say about it. But this is more about the health and  
22 safety and smoke in the air. And all we can do now is is talk about the science for the health and safety aspects of it.  
23 And I think that we accomplish that today.

25 David Mullen, ASC 3:32:40

26 Well, I just want to say that if the issue isn't the spread of COVID, but the irritant irritation from breathing smoke,  
27 making one more susceptible to getting, I guess, sicker. Then at least from a crew standpoint and aren't there masks  
28 that would get rid of the irritants or stop the irritants Now, the cast problem, which is of course a problem.

1  
2 Monona Rossol, MS, MFA 3:33:04

3 Yes, that could be done.  
4

5 David Mullen, ASC 3:33:06

6 Okay.  
7

8 Dave Perkal, ASC 3:33:09

9 Larry Sher You got to you've got to unmute you.  
10

11 Larry Sher ASC 3:33:13

12 I think, Bill, to speak to your questions part of and I think this has been an incredibly thorough and deep dive into  
13 this issue. And I think everybody's point is well taken on I think what Cynthia brought up is like, the safest work  
14 environment, and there's no question I've used smoking a lot of my stuff and there are ACs that have had irritations  
15 and there are actors that have requested not to use it. So I recognize it as an irritant. I think, in part Bill, one of the  
16 reasons why we're even having this discussion, as part of this greater discussion of the Way Forward is it was  
17 presented in part as due to COVID there'll be no more use of smoke because it's actually exacerbates the issue and I  
18 think we want to get to the heart of is that in fact, issue or is smoke an issue that we have to talk about anyway. And  
19 we have, we got rid of oils, and we've done better a year by year making the products that that are used on set. And  
20 like everything, whether it's cutting MDF, or that's part of OSHA that's part of our unions, that that is a constant part  
21 of what Erik brought up of like making our workplaces safer and safer. We should all be challenging it from all  
22 fronts, including what you do wanna with your, with your recommendation to, to the path forward. I think to Dave's  
23 point and I'll speak personally is I just want to make sure that we're not conflating the two things and talking about  
24 the irritation of smoke on set and what we can do to mitigate it as as David said, or using perhaps COVID as a  
25 chance to get rid of smoke forever and make it a CGI issue. And and personally from an artistic standpoint. I'd like  
26 to see its stay and I would also like to see that there's not misinformation, perhaps that it is exacerbating COVID,  
27 when perhaps it's not as, as Etienne brought up that perhaps there may become a solution in which the things we put  
28

1 in the air may actually help the problem. So that to me, is why perhaps we're even having this conversation as as the  
2 ASC and bringing people forward, like yourselves, and I appreciate it. So you know, that's

3  
4 Bill L. Jordon - EPA 3:35:29

5 so Dave, May I offer a thought or too high on on this issue? I think there are. I've heard the discussion touched on  
6 three different topics. how safe is the use of a haze product, just from the standpoint of what it would do in terms of  
7 irritation or chronic effects. And I think the data that I've seen supports the conclusion that the glycol so three glycol  
8 that I identified TEG propylene glycol and dye propylene glycol are very, very safe. The second issue is whether the  
9 use of a haze product causes the virus to be more available because it stays in the air longer or something like that.  
10 And the more availability it has, the more risk there is of infection. I don't see any data to support that hypothesis on  
11 other than Chinese studies, of which I'm not particularly familiar, but it sounds like they're dealing with solid  
12 materials, not liquids. And it seems to run counter to the efficacy studies that Grignard Pure has undergone that  
13 shows the Grignard Pure at least in its ingredients inactivate the virus. The third issue is the one about does the haze  
14 product cause irritation in the people working on the set and therefore make them more vulnerable if they are, in fact  
15 infected by the COVID-19 more vulnerable to having a more serious illness? I don't know enough. I'm pretty sure  
16 none of the people on the panel knows enough to be able to say for sure, but what I have read says that it's the more  
17 serious kinds of respiratory problems can chronic pulmonary obstruction CPOD and diabetes and obesity that are  
18 those chronic health conditions that lead to higher fatality rates and more serious course of disease that you're tasting  
19 the effects produced by haze products, or at least the three glycols that I've been studying are transitory and mild.  
20 And most of the time when people go outside and get in fresh air, the irritation fairly quickly disappears. So I would  
21 be think that you ought to ask medical professionals who treated [garbled] COVID-19 patient whether they see that  
22 as being a exacerbating factor, but I'd be rather surprised.

23  
24 Dave Perkal, ASC 3:38:52

25 Thank you, Mr. Jordan for that clarification that was very concise and clear, and I appreciate the clarity on that  
26 Rodney Tay... Ronnie Taylor, please.

27  
28 Rodney Taylor, ASC 3:39:02

1 Yeah, I think that was exactly what I was gonna try to get at. And I'm glad you said that. And now, so that took care  
2 of my question, but I am curious if at the end could talk about how much these when you're using this in your  
3 warehouse, can you see it in the atmosphere? Or how thick is it when you use it in your warehouse?

4  
5 Etienne Grignard - Managing Director 3:39:25

6 We're running at a light to moderate to moderate. We've run it in both of our warehouses. Both of our warehouses  
7 have pretty significant - we're a chemical company - so we have pretty good ventilation systems. Actually, our lab  
8 has been monitoring it, we've been looking at residues, we've been looking at people's responses.

9  
10 [ 3:47:58 continued in part 2 ]

11  
12 **Audio Clip Part 2**

13  
14 Etienne Grignard - Managing Director 0:00

15 I will tell you with some of the - so to answer your question light and-short and sweet: light to moderate to  
16 moderate. And the people there have actually requested it, because we share with all of our team members, all the  
17 information. I'll tell you another quick funny, not a funny one, but as I mentioned, we're working with about a dozen  
18 different engineering companies, which again, there's no business relationship to them, but they're looking at  
19 different ways to, um, kind of get America back working safely again. So one of the companies they were doing  
20 airflow studies through HVAC systems that they set up, and all of a sudden in their warehouse, they started seeing  
21 this light haze came out, and everybody thought it was a fire, everybody was concerned. And when the engineering  
22 team went out there and explained to them what they were doing, they actually requested that they start applying the  
23 product throughout the warehouse. And since then, they've been having a - go throughout the warehouse. We share  
24 with the people the efficacy studies, we share with people the science. And I don't know where the where all of you  
25 are located, but in this section in New Jersey, it's pretty much everybody knows somebody who's passed, especially  
26 if people have parents, you know, around my age. I'm an old guy. I broke the 50 plateau, so everybody's a little bit  
27 older, but we all know people that died. And when people actually saw it, and they saw the science, and it was  
28 explained to them, they actually wanted the product.



Eric Steelberg, ASC 1:31

Etienne, are you guys using it in conjunction with PPE for the employees? Or, you know, did you put on PPE when you started the dispersal of the product or is it in combination? I'm just trying to figure out how much do you think is attributed to, you know...

Etienne Grignard - Managing Director 1:48

Well, since we're a critical use supplier, our COVID-19 response plan does get audited, just like every other aspect of us. But um, so at first, it was interesting because we had one person who's job was to go around sanitizing everything with bleach. The problem with that is that when you look at - that another time, there's not enough time tonight - but we do have that Grignard Pure master presentation. It's not about the product, it's about - it is about the product - but it's a lot about a lot of other things. When you look at EPA's N-List products, what people fail to realize is - I'll use bleach for an example or Clorox for an example. If you go and you wipe down everything in your facility, which we had one person, that's all they did all day long, and then they couldn't do it on all day long because they were getting the chlorine exposure. But if let's say you have a surface and you spray chlorine bleach on it, and then you wipe it off, you are not disinfecting. If you go to the N-List from the EPA, what you'll notice is that in order to achieve disinfection, you have to dissolve the protein shell of the virus. That's approximately 5 to 10 minutes. So in order to sterilize a hard surface, you have to soak that hard surface for five to 10 minutes. How many of you actually do that on your set? How do you do it on vertical places? How do you do it on your walls underneath your table and so forth where the virus can accumulate? It is a major, major problem. So to answer your question, and sorry that I'm going into so many words, but at first what we did is that we had somebody who was just constant, we had two people right Grisham?

Grishma Desai, ASQ, PMI 1:48

Yep.

Etienne Grignard - Managing Director 3:36

1 We had two people constantly going around, and then the complaint started coming up about the, about them having  
2 sore throats from the cleaners and about their eyes getting irritated from the cleaners and all these other things, and  
3 then as we did more research we learned that the N-list which has been referred to a few times at the EPA, if you go  
4 on that it tells you what the dwell time is. The next time you look at a bottle of Lysol or Clorox, flip it over - it will  
5 tell you for cleaning operations, it will tell you the first thing to do is clean the surface, and then the next thing it will  
6 say is that to kill a specific virus, you have to allow it to dwell in a wet state between 5 and 10 minutes. So what we  
7 did at our facility is that everybody was mandated to wear masks, keep social distance, we applied the Grignard  
8 Pure, and we did a constant disinfecting operation. Since then, what we have done is that we - because of our  
9 operations and our packaging lines, it is impossible for people to maintain social distancing. We still recommend the  
10 use of masks. As far as cleaning operations, those have come to once a day and I believe that all team members are  
11 required to wash their hands every two hours or every three hours. So we have done some modifications, I will tell  
12 you that several of our team members have are not wearing masks at this point in time, although they should. But the  
13 acceptance of the product has been overwhelming, as well as the other facilities. We cannot do social distancing  
14 because some of our operations do not allow that to occur - and I believe that's it.

15  
16 Unknown Speaker 5:25

17 Okay, great. Let's go to David Mullen,

18  
19 David Mullen, ASC 5:28

20 I was just back on the irritation issue - is the irritation from glycol haze, which you know, is an actual thing because  
21 we've all felt it after working 10-12 hours in the stuff - Is it actually due to the glycol or is it due to lack of humidity  
22 I mean, basically our throats getting dried out somehow, moisture being substituted for glycol would would humi-  
23 adding more humidity to a set actually make the haze less irritating ?

24  
25 Monona Rossol, MS, MFA 6:03

26 The glycol molecule coalesces the the water around it. It's it's. So you'll have you do you do have a drying effect in  
27 conjunction with that, but it still produces the irritation that way.

1 Etienne Grignard - Managing Director 6:20

2 When you look at it and another question to look at is, have you ever utilized rewedding drops for your eyes? What  
3 are those composed of? They're made of glycol and water. That's what they are. So I cannot address that. If anybody  
4 would like to see the Pure presentation at a later point in time, I think it would be interesting to see actually all of the  
5 different areas where haze and fog are utilized, that you may not be aware of, but nearly anywhere there's a stage the  
6 largest, the largest single user of haze and fog are houses of worship.

7  
8 Dave Perkal, ASC 7:06

9 Okay, great. Let's go to... Does that answer your question, David? Okay, let's go to Erik.

10  
11 Erik Messerschmidt, ASC 7:15

12 Thanks, Dave. Yeah, I'm just curious about the... the relationship between, I guess I look, I, I fear, we're all in a  
13 position of trying to address the realities of our own response, our own creative responsibility against against risk.  
14 Right? And, and, and I think that it's fair to acknowledge that that safety is floating point, and it's contextual. And I  
15 don't know that I speak out of turn in terms of acknowledging the fact that in our present situation going back to  
16 work would, in all likelihood be cause six months ago for hazard pay, right? So, with that in mind, contextually I  
17 question about I question the reality in terms of recognizing the collective risk of going back to work period in the in  
18 amid COVID as a collective risk relative to sort of the general risk of making movies period, and I guess I ask, I ask  
19 the panel In general, in terms of their assessment, as to as it relates to smoke, or atmospheric haze or or what have  
20 you, in relation to our experience prior to COVID as a relation... in contrast to our relationship, amidst COVID. And  
21 and what the relative risks are, because I think as as Monona has expressed, and I and I appreciate and acknowledge,  
22 acknowledge the risk, and I appreciate her time - they appear to me to be well documented risks. And, and I'm very  
23 curious as to all of those as they relate specifically to COVID-19 amidst a COVID-19, potentially COVID-19  
24 ridden, ridden movie set and I would invite everyone's opinion.

25  
26 Bill L. Jordon - EPA 10:11

27 Bill Jordan again, I'll offer a couple of thoughts. When I spoke last time, I tried to address the question of whether  
28 using a haze products were risky in their own right? Answer: no. Does, do the haze products increase the risk of

1 getting COVID-19 If it's already there? I don't think so. I think you'd actually haze products, some of the haze  
2 products can actually lower that risk. And then the third question is, does the irritation of haze products make people  
3 have a worse outcome if they do get sick? And I don't know that I have the answer, but my intuition is no. How did  
4 those risks compared to getting COVID in the first place? I think it depends on all the other measures that are put in  
5 place to try to reduce the chances that somebody who is asymptomatic but has COVID comes on to the set. And if  
6 they're on the set, how likely it is that they'll be shedding virus particles through their singing or coughing or  
7 sneezing or other things like that. I think those risks are probably greater than the risks that I've discussed with  
8 regard to the haze products. And finally, there the risk of all the other things that go on on film sets, trips, falls, other  
9 chemicals like the epoxies that people have mentioned, and I have no basis for being able to characterize them - but  
10 I think to have a completely risk free situation would mean not having film making. And so you have to decide, as  
11 Ms. Rossel said, how much risk you're willing to tolerate. But I don't think in the grand scheme of things, the risks  
12 from the haze products are going to be ones that should be anywhere close to the top of the list.

13  
14 Dave Perkal, ASC 12:28

15 Okay, thank you. We're gonna go to Mark Doering-Powell, ASC and then we're gonna go to Dana Gonzalez. So let's  
16 go to Mark first.

17  
18 Mark Doering-Powell, ASC 12:35

19 Hi, Monona Rossol, MS, MFA, you mentioned earlier that the standards for fog were set incorrectly. Could you tell  
20 us how we can better set them what, what should we do to set them correctly and if anybody else wants to follow up  
21 on that?

22  
23 Monona Rossol, MS, MFA 12:50

24 Well, what I would like to see are studies where they actually use the individual chemicals and look for the irritant  
25 effects and decide what that level is because they're not all going to be the same - right now they are all set at the  
26 same - it's called the Particles Not Otherwise Regulated Standard of OSHA really basically, that's what that is.  
27 And so when it's kind of a default position that OSHA has, if we've got no data, we go to this PNOR data, and that's  
28 what those those levels are. I would like to see actual studies so that we can we can get a better better view of where

1 that irritation is. Because, you know, I know I don't have to defend the fact that that's an irritant because I know  
2 anybody who has spent a day in the bloody stuff knows what I'm talking about. So that's what I think what we need  
3 to do is to make sure that we set it at a level that we're not seeing effects in the majority of people - and remember,  
4 no standard, not the TLV not any of them is set for protection of everyone. Those are set for protection of most - not  
5 all - most healthy adult workers - people paid to take a risk. So we're going to look at those standards and I think we  
6 just need more data instead of going to those default OSHA particulate standards.

7  
8 Dave Perkal, ASC 14:26

9 Okay, lets go to... Does that answer your question Mark?

10  
11 Mark Doering-Powell, ASC 14:29

12 Yeah, yeah. I don't know if William Jordan had anything to comment or...

13  
14 Bill L. Jordon - EPA 14:36

15 The data that EPA has reviewed show it's no difference between adults and children. I agree with Ms. Rossol that  
16 the studies ought to be looked - the chemicals and compounds ought to be looked at, individually - and one of the  
17 shortcomings of the Moline and British Columbia Study and NIOSH studies is that they tended to group all of the  
18 atmosphere case products in one bucket and not draw distinctions among them. The analysis that I have done  
19 indicates to me that at least TEG, PG and DPG are very safe.

20  
21 Monona Rossol, MS, MFA 15:22

22 What about the EPA particulate standards? Do they have any application here?

23  
24 Bill L. Jordon - EPA 15:33

25 Particulates standards refer to the solid materials that are in the atmosphere from such things as automobile exhaust,  
26 the TEG...

27  
28 Monona Rossol, MS, MFA 15:45

1 Forest fires things like that.

3 Bill L. Jordon - EPA 15:47

4 Yes.

6 Monona Rossol, MS, MFA 15:47

7 ( garbled - sounds like "NIH List" )

9 Bill L. Jordon - EPA 15:49

10 And so to the extent that they're discussing solid substances versus liquids and vapors - it seems to me that the  
11 applicant ( inaudible / transmission cut off )

13 Dave Perkal, ASC 16:08

14 Okay, was that clear? I know he cut off at the last second... Dana

16 Dana Gonzales, ASC 16:17

17 Hi, how ya doing? So, first, I want to kind of speak to Erik's Erik Messerschmidt's what he talked about. I mean in a  
18 matter of about five weeks, I'm going to be in a situation just like David Mullen, ASC talked about where I'm going  
19 back I have to go back and do a show that deals a lot with smoke and and that there's an entire 9 episodes already  
20 created that have lots of smoke. And I know that I'm pretty much resigned that I know I'm going to have to do  
21 without it. I know that producers are probably going to say something pretty quickly. And I mean, this has been  
22 incredible, and I don't know if we're if there's going to be some sort of documentation of this. I mean, obviously that  
23 we're I don't think there's a conclusion to this 100%. But one of my questions for Monona was do any of the smoke  
24 products have the certification of the EPA that you are saying that Pure didn't? Or does any of them do have that ?

26 Monona Rossol, MS, MFA 17:28

27 For for... as a pesticide? Because that's what the EPA certification would be for.

1 Dana Gonzales, ASC 17:36

2 So didn't do any smoke products have that certification... ?

4 Monona Rossol, MS, MFA 17:40

5 I haven't seen I haven't seen anything. I haven't looked at all of the inert - the active ingredient list. But if you I don't  
6 know if there maybe Jordan would know if there's any of the fog chemicals on the active ingredient list for EPA.

8 Bill L. Jordon - EPA 18:00

9 The short answer is that yes, some of the fog chemicals are in antimicrobial products, they're used as air sanitizers.  
10 And those active ingredients are TEG, PG, and DPG.

12 Dana Gonzales, ASC 18:24

13 Yeah those those all have...

15 Bill L. Jordon - EPA 18:28

16 That said, I don't think you're going to take an air sanitizer product and use it on your set as a haze or fog material.

18 Dana Gonzales, ASC 18:36

19 So none of none of the products that we use are any safer in the eyes of the EPA than Pure today.

21 Bill L. Jordon - EPA 18:48

22 What it means is that EPA has looked at the active ingredients very extensively, and that's the information that I  
23 presented in my PowerPoint presentation. It also means that EPA has looked at specific products and determined  
24 that the way that the specific products are labeled and used, they would both be safe and effective. The Grignard  
25 Pure product would not be used like an air sanitizer in a in a bathroom that emits a puff of aerosol every so often, it  
26 would be introduced as a continuous material that would be throughout a facility. So EPA would need to look at and  
27 approve the use of the Grignard Pure product and vouch that it would be safe and effective.

1 Dana Gonzales, ASC 19:56

2 Okay, so, I mean, again, just going back to my first thing I started with it. So I go going back to work in 5 week's  
3 time and I, you know, I mean, it's, it's gonna be pretty hard to fill a stage with the amount of kind of atmosphere that  
4 I use. And I'm gonna there's gonna be nothing documentation wise or proof to say this is this is safer, safe or what  
5 even what we're using is safe. And I don't think we always ask that question, right. We always talk to the Special FX  
6 and you know, water based versus what used to be. So I don't know. I mean, that's something that that this  
7 committee is going to try to formulate soon, or they're just not. We don't know the answer yet.

8  
9 Monona Rossol, MS, MFA 20:52

10 We don't know the answer.

11  
12 Dave Perkal, ASC 20:54

13 Yeah, I think I think what we're doing is just an exculpatory investigation into what, you know, we were allowed to  
14 use smoke before and now because of COVID we're told that we can't and the assumption is made, it's because the  
15 smoke emits COVID or worsens the conditions. And so I think we've heard a lot of answers on that, and hopefully  
16 we can make some recommendations once the reports made. Let's go to Rodney.

17  
18 Rodney Taylor, ASC 21:22

19 Yeah, it seems like you know, just I'm just trying to really listen and be objective. And on my show, I don't use a lot  
20 of smoke on the current show I'm doing. You know, I know that certainly, Eric, Dana, David, use a lot of smoke  
21 beautifully and you know, going forward, we've now got a document that says we're not supposed to use smoke, it  
22 seems like what I'm hearing is that smoke is actually not making COVID-19 worse, I think Monona seems to be  
23 saying maybe it's more irritant and so that could be bad If you already have COVID-19...

24  
25 Monona Rossol, MS, MFA 21:58

26 (interrupting, inaudible)

27  
28 Rodney Taylor, ASC 22:00



1 (inaudible) ...smoke is, sorry, let me finish - it doesn't seem like smoke is making COVID-19 you know worse in  
2 the atmosphere. Are we going to address this with the with the IA? And are we going to suggest that maybe we take  
3 this out of the document if there's no real proof of it?  
4

5 Dave Perkal, ASC 22:00

6 Well, we're, I'm on IA Safety Committee also. So I'm going to, Mark and I are going to formulate a report based on  
7 this and other documents and we're going to submit that to 600. As you know, 600 is only one of the locals in the  
8 IA. Some of the locals are definitely opposed to any limitation on the use of smoke because it puts everybody out of  
9 business. There's also a good portion of the IA is not in the motion picture business, they're in the live performance  
10 business, you know, so there's a lot of rock concerts, a lot of venues, there's a lot of those guys that are wondering  
11 when they're gonna go back to work also and a lot of their stuff - the reason people gotta see the live shows is to see  
12 all the elements and texture of that live show, so this is just one part of that. But but that's what we're doing is trying  
13 to get an information run.  
14

15 Monona Rossol, MS, MFA 23:09

16 I think I've been misunderstood on one point and that is that, yeah, that it would cause a person with COVID to have  
17 a more severe disease. That's never what I said. What I said is if your throat is irritated, you may be more open to the  
18 establishment of the virus. That's what I'm going to consider if you already have an irritated red throat, it seems to  
19 me that that might make a more habitable place for the virus.  
20

21 Rodney Taylor, ASC 23:37

22 Is there any scientific proof for that?  
23

24 Monona Rossol, MS, MFA 23:39

25 No, there's none at all. And that's what we're saying, without knowing but we need to entertain all of these  
26 potentials. You see, and this is the problem that we have in the United States. We say you got to prove it's toxic first,  
27 and then we don't study it so that we can call it non-toxic. What we need to do is to look at all these potentials and  
28 all this problem and say we don't really know. So if we don't know, let's at least face the fact that we're not sure we

1 really don't know if it makes it worse or better, but to simply proceed without without looking at it doesn't make any  
2 sense.

3  
4 Dave Perkal, ASC 24:20

5 I just my own personal comment, it feels like an ideology, not a scientific theory that's been proven. It feels like a  
6 hypothesis, but nothing...

7  
8 Monona Rossol, MS, MFA 24:28

9 It's what it is, is it's common sense. If you don't know if something is toxic, why expose yourself to find out?

10  
11 Dave Perkal, ASC 24:37

12 I mean, if you don't know you'll never leave the house, you know,

13  
14 Monona Rossol, MS, MFA 24:40

15 oh, no, no, no, no, that that's not what I'm saying. You know, that's taking it to the extreme what I'm saying...

16  
17 Dave Perkal, ASC 24:47

18 Let's go to Craig now.

19  
20 Craig Kief, ASC 24:49

21 Thanks, Dave. Um, so with these two possible ways that smoke or haze, so I should say would be detrimental on a  
22 set with the possibility that it might transmit the virus or the possibility that the irritation that haze causes would  
23 therefore make a person more susceptible to the virus. I guess I don't really have a question so much as an  
24 observation. Etienne, you pointed out earlier that houses of worship are a major consumer of haze products as are  
25 live venues. I'm quite certain that motion picture production is actually a very small customer base for these  
26 products. And it just seems to me with, you know, if, if this were a real issue, viruses being transmitted or the  
27 irritation caused by it been making people more susceptible that any number of airborne viruses that we've lived  
28 with for years would cause super spreading events at live concerts and houses of worship and things like that.

1 We've, we have seasonal flu every year we've gone through MERS, Cov2 to tuberculosis, avian flu. And, you know,  
2 with decades of use of these products, you know, I've never heard of super spreading events in these venues like  
3 that.

4  
5 Etienne Grignard - Managing Director 26:14

6 To comment on that, it's interesting with the outbreaks as of as they are right now, none of them have been linked  
7 back to it in area that you would have imagined, would be one of the areas for the virus to to, to spread rapidly.  
8 There was a report that came out that the spread of the virus in London and in Italy was due to the outside soccer  
9 game between London and Italy. Everybody got back on the planes, they went back to Italy and that section of Italy  
10 had an enormous explosion. The area in England where most of the fans traveled from had an enormous explosion.  
11 We know for a fact that the virus was in the States, you know, two to three weeks before it was ever reported. With  
12 that said, none of it has been linked back to an enormous explosion at a live entertainment event or at a church  
13 where haze was utilized. So your observation from what science is telling us is absolutely correct.

14  
15 Craig Kief, ASC 27:27

16 Cool, thank you.

17  
18 Dave Perkal, ASC 27:28

19 Thank you. Let's go to Erik again.

20  
21 Erik Messerschmidt, ASC 27:35

22 Yeah, I just I just, I just want to reiterate, and that - I feel like what we're what we're really litigating here is the  
23 relationship between smoke and COVID-19 and whether or not COVID-19 In fact, persists, or is, is transmitted  
24 through the presence of atmospheric smoke. And, and from what I'm gathering from obviously, look, I'm not a  
25 science scientist I'm a cinematographer, but from what I'm gathering from this conversation is that that that is not  
26 clear. And in fact, there may be substantial evidence to support the fact that the presence of propylene glycol and  
27 ethylene and triethylene glycol may, in fact, mitigate the chances of infection. And I guess, sort of in terms of trying  
28 to recognize the necessity for minimizing extended conversation, that is that a reasonable assumption? Because

1 Because if it is, I think that what we're really trying to establish right now in the midst of this conversation is  
2 whether or not it's appropriate for our labor union to prohibit the use of theatrical smoke in the interest of mitigating  
3 the spread of COVID-19. And that is not in the interest of the the associated risks with theatrical smoke, but  
4 specifically with the mitigation of the spread of COVID-19. And, and from my vantage point, individually, as a non  
5 scientist, it appears to me that that is not conclusive. So, so I will welcome the opinions of everybody. But, but, but  
6 individually, it appears to me that there is there is not substantial evidence to suggest that, that theatrical smoke or  
7 haze contributes to the spread of COVID-19 specifically. It may have well established, well documented acute  
8 effects, but but it's not they do not necessarily pertain to the spread or the perpetuation of a virus that we're now  
9 dealing with. And I sort of I think that that is that is sort of the essence of the conversation we're trying to have right  
10 now.

11  
12 Etienne Grignard - Managing Director 30:22

13 Um... go ahead Grishma.

14  
15 Grishma Desai, ASQ, PMI 30:25

16 Oh, no, I wasn't saying anything.

17  
18 Etienne Grignard - Managing Director 30:27

19 Oh (inaudible)

20  
21 Bill L. Jordon - EPA 30:27

22 So Bill Jordan here. I'm completely comfortable with that formulation based on everything that I've read.

23  
24 Etienne Grignard - Managing Director 30:37

25 Also, I do want to call out when we went back to the definition sheet. You cannot confuse theatrical haze smoke and  
26 fog, which is a liquid micro droplet, which vaporizes with that of smoke coming from cigarettes, or that from fire  
27 smoke that comes from burning carbon. They are completely different. Those other smokes have solid particles in  
28 them. And the products that your industry is currently using cannot be - it's a very bad name. In fact, I will tell you

1 how bad it is: when we were speaking with JetBlue and when we're speaking with Amtrak and we're speaking with  
2 all these others, we were specifically told never to use the word fog, smoke or haze, because it is considered such a  
3 negative. People have a negative connotation towards the word smoke. People think of carbon monoxide carbon  
4 dioxide going way up. In our lab we have CO2 monitors, we blast smoke every single day. Grishma, I guarantee,  
5 Grishma, and everybody else in our lab has had more exposure to smoke over the last five years than anybody on  
6 this panel. Now I'm only saying five years but she gets it approximately what would you say Grishma eight hours a  
7 day ?

8  
9 Grishma Desai, ASQ, PMI 32:01

10 With all the fog testing that we're always doing in the lab.  
11

12 Etienne Grignard - Managing Director 32:04

13 And we have not so, with that said, A, the first people that Grignard looks after is its team members, period. That's  
14 why I've also mentioned that if anybody's ever around and they want to come to our facility, we're an open door. But  
15 again, I am pleading with you. It's in the presentation that I gave the last piece of the information that I gave is there  
16 needs to be an education, on the health and safety of these products - in outreach. And then, you know, there's gonna  
17 be more documentation coming because there are so many other people right now looking at this as a possible  
18 solution. They are looking to guidance from your industry.  
19

20 Dave Perkal, ASC 32:47

21 Thank you for that.  
22

23 David Mullen, ASC 32:48

24 I just want to say I'm back to the irritation issues then, why a ban on smoke for example, but not a ban on is there a  
25 ban on smoking? You know, e-cig, fake cigarettes, herbal cigarettes, scenes where people are smoking. It seems the  
26 cast is being more irritated by that than, in a sense if making this making it safer for the cast as an issue, you would  
27 ban having everyone smoking herbal cigarettes in a bar scene or something.  
28

1 Etienne Grignard - Managing Director 33:20

2 I think it would be safe to say that smoking a cigarette, and even smoking a vape, which contains these glycols is  
3 much more dangerous because of the additives in the glycol. Would you agree with that Bill Jordan or Dr. Esposito?

4  
5 Dr. William Esposito, CIH, Dr. PH 33:38

6 Yeah. And I noticed everyone's calling it smoke and I tried to in my in my presentation to divide that out and clearly  
7 put this stuff in a liquid that that is not made up of a witch's brew of of carcinogens and irritants

8  
9 Monona Rossol, MS, MFA 33:59

10 But by burning anything with a carbon base will produce carcinogens. Whether it's oil or wood, or...

11  
12 Dr. William Esposito, CIH, Dr. PH 34:07

13 Yeah but this isn't cigarettes.

14  
15 Monona Rossol, MS, MFA 34:09

16 or whatever, no, no, but she's talking about cigarettes and herbal cig...

17  
18 David Mullen, ASC 34:13

19 What I was saying that why isn't there a SAG restriction against smoking? Y'know.

20  
21 Monona Rossol, MS, MFA 34:18

22 There, they really try to keep it away from especially if there's children on a set. It's not It's not supposed to be done.

23 Because you know that it doesn't - you can even find carcinogens in incense smoke. If you burn something that is  
24 carbon, you're going to get a whole bunch of things like that. So we don't like to see anything burning on...

25  
26 David Mullen, ASC 34:40

27 You know, when I do a 1950s nightclub scene and I've got 50 extras all with herbal cigarettes lighting up before the  
28 take, it seems that's a more health hazard problem than the haze I'm adding to the set.

1  
2 Monona Rossol, MS, MFA 34:54

3 Absolutely.

4  
5 Bill L. Jordon - EPA 34:57

6 Yeah.

7  
8 Dave Perkal, ASC 34:58

9 Okay, thank you. We're going to go to Nate Goodman, ASC.

10  
11 Nate Goodman, ASC 35:03

12 Thanks, David. Yeah, I just had to like a two part question. So... this is actually something maybe Dave can answer  
13 is, the first part is - So is the ban on the smoke that's in the documents - is that just only based on anecdotal  
14 evidence basically? Or is it actually based on something other than just conjecture and opinion? Obviously, we're  
15 trying to get a scientific basis. Now to to, to challenge it, perhaps. So that was the first question. And then the second  
16 question would be for Etienne or for Grishma, which is the studies that you're doing about the efficacy of the haze in  
17 actually working to reduce viral and microbial infection in the air, specifically related to COVID. When when do  
18 you expect the results of that type of testing to be finished ?

19  
20 Grishma Desai, ASQ, PMI 36:03

21 So we already have part of that testing in progress right now, we should probably be getting the results by next  
22 week. And you know, based on, you know, the first set of data was done on the moderate haze, and we got that  
23 99.9% kill in 10 minutes. Now, we went down to a lower haze level. And we also tried out a different machine to  
24 see how the different machines are able to give that efficacy, based on the results we receive next week is when we  
25 would be able to, you know, do the final set of testing to recommend, what level or what is the lightest level of haze  
26 that would be effective at you know, inactivating the virus in the air.

27  
28 Nate Goodman, ASC 36:43

1 Right, so are you planning to write, are you planning to write like a paper or something that's actually going to be  
2 able to be peer reviewed? So that it's actually something that can be presented in a definitive positive way basically,  
3 or you know, are we gonna have to just keep remaining in the ether in terms of conjecturing about the possibility of  
4 using it for that purpose?

5  
6 Grishma Desai, ASQ, PMI 37:10

7 No once we have the data that is in line with what we're looking for in terms of the levels that we can use for  
8 inactivation, we're definitely going to have that as part of efficacy studies that would be, you know, submitted to the  
9 EPA for their evaluation of the product and how it is in terms of safety for the application that we're recommending  
10 it for, and the efficacy and protecting the people that will be using the product against the virus. And then that'll be  
11 I'm sorry,

12  
13 Nate Goodman, ASC 37:38

14 No, no, go ahead, sorry.  
15

16 Grishma Desai, ASQ, PMI 37:40

17 Yeah. And then that's how we'd get into the approval level and then we'll be able to share all those results. You  
18 know, because once you have it approved or registered with the EPA, a lot of the data about the product is going to  
19 be available to the people that are using it so that they know what is in their product, how effective it is and how  
20 they're supposed to apply it to get the maximum results.

21  
22 Nate Goodman, ASC 38:02

23 Right. So do you expect that given the fact that it might be effective against COVID that the EPA like that that  
24 whole process with the EPA is going to be fast tracked? Or is it going to be something that's going to take you know,  
25 years or something like that?

26  
27 Grishma Desai, ASQ, PMI 38:17  
28



1 I believe given the situation right now, with the COVID they are fast tracking applications for new disinfectants and  
2 just as Etienne and Bill Jordan have mentioned, you know, most of the most of the disinfectants we have right now,  
3 are more hard surface based with EPA also looking into the soft porous surfaces and air which is right now, you  
4 know, the main mode of transmission for the COVID they will definitely be fast tracking applications and looking  
5 at, you know, efficacy studies and ingredient studies so that they can have more alternatives to what's already  
6 available on the market.

7  
8 Nate Goodman, ASC 38:55

9 So, Dave, so like what... so the inclusion the inclusion of the smoke ban is based on what I mean in a nutshell?

10  
11 Dave Perkal, ASC 39:05

12 I don't know the exact genesis of how that smoke ban got in, but what I do know is that The Way Forward document  
13 is a culmination of the IA DGA & SAG putting forth their best efforts - Monona was part of this - in developing a  
14 guideline to move forward, right, nothing's set in stone right now. So if you look at The Way Forward document, it  
15 says that you can use it with a Health Safety Officer, but then Local 600 from the Safety Committee of which I'm a  
16 member of was asked to survey everybody - I was I was because I'm a DP I so I surveyed other DPs about what  
17 would be important for them. And so a lot of our information that we were concerned about with regards to like prep  
18 and things that DPs have to deal with went into the white pages, the white paper. Some other categories within our  
19 Local expressed a concern about atmosphere. And that ended up in the document. And so it's only our Local 600  
20 that now has an exclusion for the use of smoke product. Like, to my knowledge, I don't think 44 has it. I don't think  
21 80 has it or anybody else has it. So I think the idea was to just err on the side of cautious - of caution - if we don't  
22 know anything about it, just just, ban everything that we don't know anything about. Because it's easier to take that  
23 stance. Y'know, you can't be in trouble if you said everything is bad, then, you know what I mean? So that's as much  
24 as I know about it, but that's why we're all here is because we all noticed that in there and it was an intense interest  
25 in the subject. But I'm gonna I'm gonna go to Bill Bennett, ASC , and then we're going to close it out because it's  
26 been an incredibly long session, and I really appreciate everybody for coming in and taking the time to do that. I  
27 mean, really, really grateful for every, every one of our panelists. So, Bill, close it out for us.

1 Bill Bennett, ASC 41:00

2 Well, I also agree I, I appreciate everyone and especially some of the people that are on the east coast. It's well past  
3 dinner time.

4  
5 Monona Rossol, MS, MFA 41:08

6 Oh, yeah hungry too (garbled)

7  
8 Bill Bennett, ASC 41:10

9 I really appreciate that. But I, Nathaniel sort of spoke to it and then he moved on to another point. To me. It's  
10 unacceptable to ban use of onset haze or whatever the word we're going to use, based upon unproven suppositions.  
11 It's totally unacceptable. I mean, it's like that standard joke about attorneys that you ask your attorney, what's the  
12 best way to stay safe and they say stay in bed, don't get up and don't ever leave your bed. Yeah, you would stay safe.  
13 Nothing would ever happen to you. But you know, we have a long tradition of creating these images, and for many  
14 cinematographers, the use of onset haze is part of the creation of the look to like so many of you have spoken to.

15  
16 Dave Perkal, ASC 41:54

17 A great way to close it out Bill. I really appreciate it. Once again I want to thank all our guests for coming in today.

18 Once again we are in deep gratitude for you coming in and in dept for the information. Thank you very much.

19 End Panelist Meeting  
20  
21  
22  
23  
24  
25  
26  
27  
28