

Notice of Objection to a Registration Decision under Subsection 35(1) of the *Pest Control Products Act*

Avis d'opposition à une décision d'homologation en vertu du paragraphe 35(1) de la Loi sur les produits antiparasitaires

Date received – Date reçue
Submission No. – N° de la demande

1. Objector Information – Information sur l'opposant

Name – Nom / Corporation – société / Organization – organisation*

Lynn P. Tordo, M.S. - Thor Specialties, Inc. (agent for Thor GmbH)

Postal Delivery Address – Adresse de livraison postale*

50 Waterview Drive

City / Town – Ville*	Prov / State – Province / État*	Country – Pays*	Postal Code / ZIP – Code postal / ZIP*
Shelton	CT	USA	06484
Phone – Téléphone*	Fax – Télécopieur	E-mail – Courriel	
203-516-6980		ltordo@thorsp.com	

2. Product Information – Information sur le produit*

Name of active ingredient to which the decision relates – Nom de la matière active à laquelle la décision se rapporte*

Octhilinone

Name of end-use product to which the decision relates – Nom de la préparation commerciale à laquelle la décision se rapporte*

ACTICIDE OIT Technical (PCP 27038), ACTICIDE 45 Mildewcide (PCP 27271), ACTICIDE 45-F (PCP 31254)

3. Registration decision to which the objection relates – Décision d'homologation pour laquelle vous déposez un avis d'opposition*

Decision on application – Décision concernant la demande

☐	Granting registration – Homologation accordée
☐	Denying registration – Homologation rejetée
☐	Granting an amendment of a registration – Modification à l'homologation accordée
☐	Denying an amendment of a registration – Modification à l'homologation rejetée

Decisions on re-evaluation or special review – Décision concernant la réévaluation ou l'examen spécial

☐	Confirming registration – Homologation confirmée
☒	Cancelling registration – Homologation annulée
☒	Amending registration – Modification à une homologation

4. Date the decision statement was made public – Date de la publication de l'énoncé de décision*

2017-05-31

5. Area of scientific evaluation to which the objection relates – Volet de l'évaluation scientifique touché par l'avis d'opposition*

☒	Health risk assessment (toxicology, food residue, occupational exposure) – Évaluation des risques pour la santé (toxicologie, résidus dans les aliments, exposition professionnelle)
☐	Environmental risk assessment (environmental fate, environmental toxicology) – Évaluation des risques pour l'environnement (devenir dans l'environnement, écotoxicologie)
☐	Value and efficacy assessments (crop tolerance, value) – Évaluation de la valeur et de l'efficacité (tolérance des cultures, valeur)

6. Scientific basis for the objection – Fondement scientifique de l'opposition*

Attachment included? – Pièce jointe incluse? ☒ Yes – Oui ☐ No – Non

The scientific basis for our objection is contained in Appendices A – G (attached).

7. Signature of objector or representative – Signature de l'opposant ou de son représentant

Cheryl Woodward for LPT

Printed Name – Nom en lettres moulées*

Lynn Tordo

Date*

2017-07-28

Objectors who submit confidential information (i.e., confidential business information, confidential test data) are responsible for identifying this information which is part of their submission.



The Dow Chemical Company

400 Arcola Road
Collegeville, PA 19426
U.S.A.

July 27, 2017

Peter Brander
Chief Registrar
Pest Management Regulatory Agency
2720 Riverside Drive
Ottawa, Ontario
K1A 0K9

Re: Notice of Objection RVD2017-02, Re-evaluation of Oocthlinone (OIT)

Dear Mr. Brander,

We are writing to you in order to file a Notice of Objection to the conclusions put forth in the Re-evaluation of oocthlinone (dated May 31, 2017). Of most concern is the request to remove the use of oocthlinone as a material preservative in coatings, and to reduce the maximum application rates in building materials, aqueous emulsions, adhesives and polymer compounds.

You may recall that the OIT Task Force previously met with the Agency (via teleconference on February 15, 2016) in order to gather more details on the methodology and process used by the Agency to support the OIT use restrictions as captured within the Proposed Re-evaluation decision. As a follow-up to the teleconference the Agency provided a copy of the detailed Risk Assessment. On April 8, 2016 the OIT Task Force provided initial commentary on the detailed Risk Assessment and the Proposed Re-evaluation decision.

The Agency then provided a response to the OIT Task Force comments within the final Re-evaluation Decision Document (dated May 31, 2017).

The OIT Task Force believes there are opportunities for further refinement of the exposure estimates which were incorporated into the Agency's assessment. Included with this submission are recommendations for additional refinement. Furthermore the use of personal protective equipment (PPE) for the application of paint should also be considered because there are worker protection standards for commercial painters as well as PPE recommendations found within the airless sprayer manuals and the Material Safety Data Sheets for the paints.

An update on the status of the Antimicrobials Exposure Assessment Task Force data (AEATF II) is also included. The AEATF II data will allow for additional refinement to the exposure estimates, once the pending studies become available.



WORLDWIDE PARTNER

Attached please find the following:

- 1) Justification to maintain the current uses/use rates (Appendix A)
- 2) Summary and discussion on Dermal Penetration studies (Appendix B)
- 3) Discussion on refinement of the exposure estimates (Appendix C)
- 4) Discussion on the endpoint selection for the 90 day rat study (Appendix D)
- 5) Status of the AEATF II studies (Appendix E)
- 6) Summary of the Airless Sprayer Manual PPE recommendations (Appendix F)
- 7) Summary of the PPE recommendations for paints (Appendix G)

We trust the attached documents will provide sufficient data and scientific rationale to allow the Agency to reconsider the decision and permit the continued use of octhilinone as a material preservative in coatings, and in building materials, aqueous emulsions, adhesives and polymer compounds at the use rates as listed on the existing End-use Product labels.

Should you or your team members wish to discuss this further, please do not hesitate to contact us.

Sincerely,
The OIT Task Force;



Joanne Ryder
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Product Stewardship Regulatory Manager
Dow Chemical Company



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Thor Specialties, Inc. (Agent for Thor GmbH)



Adrian Krygsman
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Troy Chemical Co.

**OIT TASK FORCE COMMENTS ON:
OCTHILINONE RE-EVALUATION DECISION DOCUMENT dated May 31, 2017****Scientific Justification for the Need for Addition Level Ranges of OIT:****Introduction**

According to the Re-evaluation Decision for Oocthilinone (OIT) (RVD2017-02), the PMRA has cancelled the use of OIT in coatings and limited the maximum amount of OIT in Building Materials, Polymers, and Adhesives to 0.54 g a.i./L (540 ppm a.i.).

Justification for recommended use ranges

The justification below encompasses the following label use rates:

Coatings (water and solvent-based): 540 - 2160 ppm a.i.

Caulks and sealants: 540 – 1035 ppm a.i.

Aqueous emulsions and adhesives: 540 – 1035 ppm a.i.

Polymer compounds: 540 – 1035 ppm a.i.

General comments

OIT is one of the most effective molecules for prevention of fungal growth. It has no known gaps in its activity spectrum against fungal species and has a relatively low water solubility (0.48 g/L), which enables it to have a good balance of retention and migration within a cured compound. It also has hydrophilic / hydrophobic character and its mode of action relates to its electrophilic nature – all of these attributes are reasons for its virtually unparalleled effectiveness as a fungicide at sub-percentage use levels.

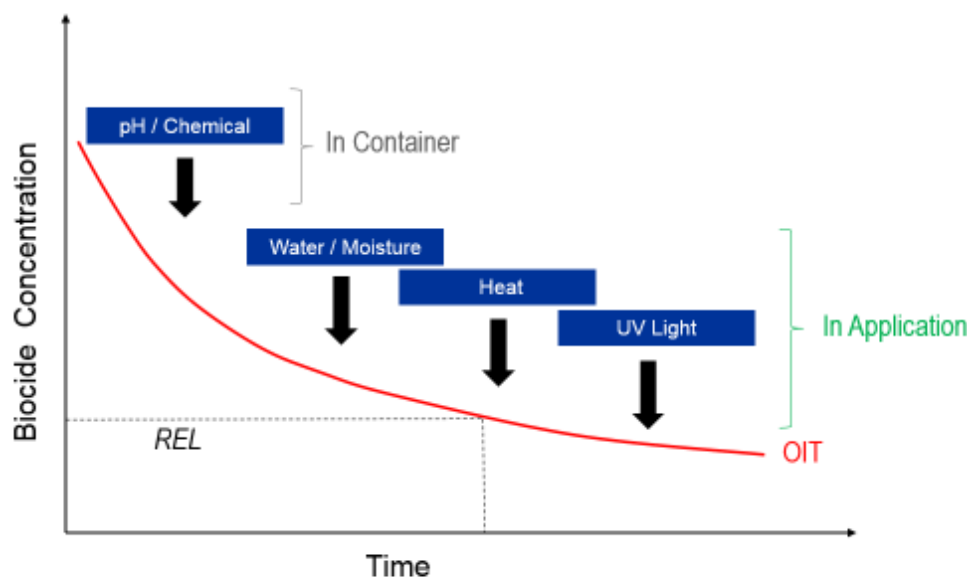
All materials preservatives have a recommended use range. In the case of a materials preservative based on a single chemistry (such as OIT) which has been used for decades, the use range recommendation is based on laboratory evaluations (using well established microbiological challenge test methods) as well as many years of application data in-service. OIT is mostly used as a dry-film preservation agent designed to prevent fungal defacement on cured end product in service. Although OIT does have preservation benefits for the wet (uncured) water-based compounded formulation, its major purpose is for prevention of establishment of defacing fungi (molds) following curing. It is well known that the concentration of antimicrobial substance required to prevent microbiological establishment in dry (dry-film) applications is substantially higher than the requirement for wet (in-can) applications.

Data exists in the public domain as to how effective OIT is against defined organisms in liquid (aqueous) MIC (Minimum Inhibitory Concentration) assays. However, no reliable public data is readily available as to concentration requirements in practice for cured compounded products (such as coatings and building materials). MIC values have some utility when used to compare antimicrobial attributes of different molecules, but have little or no value outside of aqueous liquid assays and no reliable correlation with levels required in-service. Reasons for this include, but are not exclusive to, the limited degree of contact between fungal spore germ tubes with OIT molecules at the very surface of the cured product as well as extreme variability of conditions that occur in-service over time (years), particularly in exterior environments. Available surface OIT molecules are further diluted by fungal spore adhesins and extracellular matrix compounds at the point of contact; hence supporting the need for higher concentrations in the cured compound. The amount of anti-microbial compound required at the surface of a cured compound is often referred to as the Required Effect Level (REL) or Effective Concentration (C_{eff}).

APPENDIX A (cont.)

In-container and In-service loss

Apart from the reasons given above, there are other reasons why a broad concentration range is required for dry-film antimicrobials such as OIT within a label-use category. This is because the concentration of OIT will be reduced over time due to loss from in-can and in-service conditions (Figure 1).



REL - Required Effect Level (below REL biological growth can occur)

Figure 1. Factors causing a reduction in dry-film biocide concentration over time. In-container reduction in OIT can be due to common formulation compounds such as primary, secondary or tertiary amines. In-application influences are dependent on prevailing environmental conditions throughout the service life of the cured product. Until such time as the surface concentration drops below the REL, no fungal establishment will occur on the cured compound surface.

It follows, therefore, that the concentration of OIT required for interior applications would be on the lower end of the recommended range and that the concentration required for exterior applications would be on the higher end of the recommended range. The higher the starting concentration, the longer the period before the REL is reached and fungal defacement occurs (Figure 1). This would be applicable to any compounded product, including surface coatings, caulks, sealants etc. Taking into account the starting concentration is important, since it relates to the frequency with which re-application or cleaning/sanitization occurs; which all impacts on the use of natural resources and energy. In-service lifetimes of compounded products can be extended substantially by adding sufficient OIT, reducing the frequency of re-coating or reclamation substantially.

Environmental Conditions

Large variations in environmental conditions throughout the geography of a region / country is another reason for the broad range in recommended addition levels. Areas where high humidity or rainfall and UV light are relevant will show more rapid loss than areas with less extreme conditions. Aspect will also have an effect, with exposure to sunlight or driving rain affecting the rate of loss or degradation.

APPENDIX A (cont.)

Formulation Differences

Apart from the in-service or in-can chemical influences of individual formulations, the wide variety of different formulation types will have widely different dry-film preservative requirements. This is especially relevant for exterior products.

For example, the pigment-to-binder ratio (PVC or pigment volume concentration) of a coating will have a big influence on the retention of OIT in service, particularly for exterior coatings. An exterior coating with a low PVC (high binder concentration) may require 1500 ppm OIT in the wet product to provide 3 - 5 years fungal-free lifespan whereas a coating with a high PVC may require 2100 ppm for the same lifespan. The difference can be attributed to the greater retention of active in the low PVC product versus the high PVC product.

Other formulation differences may relate to the amount of primary pigment (titanium dioxide or zinc oxide) to filler pigment ratio within the PVC; coatings with higher TiO₂ (and/or ZnO) to calcium carbonate / kaolin ratios can show greater shielding against UV degradation of OIT. Hydrophobic additives in some coatings can also reduce OIT loss to leaching.

Similar logic in vastly different formulations can be applied to the other label-use categories, such as caulks and sealants, aqueous emulsions, adhesives, and polymer compounds.

From an exposure potential perspective, it should also be noted that only a fraction of OIT present in the applied coating volume will occur at the very surface of the coating / cured product at any one time, and that the concentration throughout the coating volume and at the surface will decrease over time. We are unaware of any occurrences (where OIT has been used in a coating) in over five decades of any adverse human exposure due to the use of OIT in coatings – this includes use at very much higher concentrations than the current maximum that was previously approved by the PMRA in coatings (2160 ppm OIT).

OIT TASK FORCE COMMENTS ON:**OCTHILINONE RE-EVALUATION DECISION DOCUMENT dated May 31, 2017****Dermal Penetration:**

The re-evaluation decision of the PMRA includes exposure and risk assessments based upon 100% dermal penetration of octhilinone. We consider such exposure assessments to be overly conservative given the available information concerning dermal penetration of OIT in a variety of formulations.

In a standard OECD 427 guideline and GLP compliant study the absorption of radiolabelled OIT (45% preparation in propylene glycol) was assessed following dermal application at 200 or 1000 mg/L in rats (Wenker, 2006). Excretion via the urine was the primary elimination route; 20 % of the administered radioactivity was excreted by this route at 200 mg/l and 24 % at 1000 mg/l, mainly within the first 10 hours of exposure. Faecal excretion accounted for about 4 – 5 % of the administered dose and excretion via the volatiles accounted for about 2 %. The total excretion of radioactivity during the study period was 27 % at 200 mg/l and 31 % at 1000 mg/l. The rate of total excretion was highest during the first 10 hours of the sampling period (16 % at 200 mg/l and 19 % at 1000 mg/l) and was declining at the end of the study (72 to 96 h: 0.9 % at 200 mg/l and 0.7 % at 1000 mg/l).

Overall the study indicates that absorption via the dermal route is not extensive with approximately 40% of the total administered dose being absorbed and therefore systemically bioavailable.

The results above are further corroborated by a second study in which the dermal bioavailability of OIT was assessed in guinea pigs following administration in a range of formulations including acetone, ethanol and a number of aqueous and solvent based paints (DiDonato & Hazelton, 1990). In addition this study also investigated the effects of occlusion on dermal bioavailability.

Overall the study demonstrates that administration of OIT in acetone or ethanol formulations resulted in maximal dermal bioavailability of 36 or 47% following occluded exposure. Similarly, unoccluded exposure resulted in 33% (ethanol), and 29% (acetone), dermal bioavailability. Also observed in the study was a significant attenuation of the dermal bioavailability of OIT when administered in paint formulations. Unoccluded dermal application of OIT formulated in aqueous or solvent based paints resulted in dermal bioavailabilities of between 4 and 8%, some 1/5th to 1/9th that dermally available when applied in standard formulations.

Together this data therefore indicates that application of 100% dermal bioavailability in the risk assessment is not warranted and that for standard formulations a dermal absorption value of 40% is more applicable. Furthermore, when formulated in paints due to the matrix effects and significantly attenuated exposure potential, a dermal absorption value of 10% would be appropriate for use in risk assessment. As such the unit exposures applied should be adjusted accordingly.

References

Wenker MAM, 2006, Dermal absorption study with 2-n-Octyl-4-[4,5-14C]isothiazolin-3-one in the Wistar rat, NOTOX B.V., Project 397856, 05-12-2006, unpublished*

DiDonato L. J and Hazelton G. A. 1990, 14C-RH-893 Effect of Vehicle, Formulation, or Occlusion on Dermal Bioavailability in Male Guinea Pigs, Unpublished Company Report 88R-206*

*These studies are available to the agency upon request.

OIT TASK FORCE COMMENTS ON:

OCTHILINONE RE-EVALUATION DECISION DOCUMENT

Risk Assessment comments:

In reviewing the risk assessments submitted in the re-evaluation review decision by the PMRA, opportunities for refinement of the exposure estimates were identified.

Daily exposure estimates provided by PMRA were based on surrogate unit exposure (UE) data from the Canadian PHED (Pesticide Handlers Exposure Database) (PMRA, 2002). These data were acknowledged to provide a conservative estimate of exposure for secondary handlers of treated finished materials or products, particularly when extrapolated to other uses beyond the representative PHED scenario for paint brush application.

The Biocide Handlers Exposure Database (BHED®) developed by the Antimicrobial Exposure Assessment Task Force (AEATF) II contains monitoring data for a number of scenarios including application of paints. These data can be used to calculate user- or scenario-specific UEs per active ingredient (a.i.) applied via dermal and inhalation routes. These data are generated under the assumption that workers are wearing long sleeves, long pants and no gloves. BHED® is intended to present best practice in handler exposure studies and methods.

As a first-pass investigation of how the existing exposures might be refined, updated UEs based on relevant measured BHED® data were applied to the scenario with the highest risk of concern, airless spray application by professional painters at the maximum use concentration. UEs were recalculated using the BHED® SciBin Unit Exposure Tool for the “Applicator – Latex Paint – Exterior Airless Spray” scenario, geometric mean. The recommended dermal absorption factor of 10%, also based on measured data, was then applied to the unit exposure. This value was substituted for the PHED UE values in the table provided in the PMRA re-evaluation decision document. All other existing parameters used by the PMRA were carried forward with no change: 80 kg bodyweight, daily use volume of 187.5 L, containing the maximum concentration of 2.16 g a.i./L. Benchmarks and target MOEs used by PMRA were also carried forward without change.

Scenario	Unit exposure (µg/kg a.i.)		Application rate (kg a.i./L)	Volume (L/day)	Dermal daily exposure dose (mg/kg bw/day)	Dermal MOE	Inhalation daily exposure dose (mg/kg bw/day)	Inhalation MOE	Combined MOE
	Dermal	Inhalation							
Airless sprayer - PHED	84706.4	1073.6	0.00216	187.5	0.42883	58	0.00544	31	20
Airless sprayer - BHED®	6.83	0.048	0.00216	187.5	3.46x10 ⁻⁵	723027	2.43x10 ⁻⁷	699588	355557

The revised exposure estimates result in MOEs that significantly exceed the targets required by PMRA and therefore place risk well below the level of concern.

APPENDIX C (cont.)

Although the substitution of relevant BHED[®] unit exposures is sufficient to eliminate risk concerns, other points to consider in a deeper refinement would include the relevance of daily usage volumes and the standard best-practice use of PPE and RPE by professional painters.

OIT TASK FORCE COMMENTS ON:**OCTHILINONE RE-EVALUATION DECISION DOCUMENT dated May 31, 2017****90 day dermal toxicity study with OIT in rats:**

The re-evaluation decision of the PMRA derived a “NOAEL for systemic toxicity = 25 mg/kg bw/d, based on decreased body weight and body weight gain in males and increased adrenal gland and heart weight in females” from the subchronic (90d) dermal toxicity study with OIT in rats. We consider this NOAEL overly conservative when taking into account the nature of such effects.

Effects on body weight in male rats:

Although being statistically significant, the decreased body weight and body weight gain in male rats is not a direct effect of the active substance, OIT. In fact, the skin irritating properties of OIT, leading to local effects as erythema and oedema, have very likely led to a discomfort of the animal. It is well-known that rodents react to such a discomfort with a reduced food intake and consequently a decreased body weight gain. Therefore, the decreased body weight and body weight gain observed in the 90d dermal toxicity study with OIT has to be interpreted as secondary effect to the skin irritation caused by OIT. In line with this interpretation of the study results, the UK competent authority (CA) evaluated the reduced body weight in males only as an effect that is secondary to local effects. On this basis the UK CA defined the NOAEL of the dermal study to be 125 mg/kg bw/d; nota bene, all other EU member states agreed to this decision.

Effects on adrenal gland in female rats:

There was a statistically significant increase of the adrenal weight and the adrenal/body weight ratio (%) in females treated with OIT in the high dose group, as well as an adrenal eosinophilic focus in 1 out of 10 high dose females. However, in absence of a dose-response this finding should not be considered as a direct effect of the active substance, OIT. Hence, the effect on adrenal gland must be considered as biologically not relevant. In agreement with this interpretation, neither the study director nor the European evaluating competent authority (UK) concluded that this observation may be a substance-specific adverse effect.

Effects on heart weight in female rats:

There was only a statistically significant increased heart/body weight ratio (%) (heart weight was not significantly increased) for females in the high dose group compared to the corresponding control animals, as well as inflammatory cell foci in the heart. In absence of a dose-response this finding should not be considered as a direct effect of the active substance, OIT. Furthermore, the above mentioned effects were also observed in some control animals and thus, must be considered as incidental findings. The study director described the findings as “generally infrequent and of minor

APPENDIX D (Cont.)

nature". Again, the European evaluating competent authority UK does not highlight the observation as a substance-specific adverse effect.

Overall, the NOAEL for systemic effects derived from the subchronic (90d) dermal toxicity study with OIT in rats is 125 mg/kg bw/d. In the 25 mg/kg bw/d dose groups, the decrease in body weight and body weight gain in male rats is secondary to local skin irritating effects. The effects on adrenal gland and heart weight (25 mg/kg bw/d dose group) are biologically not relevant. Generally, it is evident from a range of repeated dose toxicity studies that isothiazolinones cause point of contact toxicity in form of irritation and/or corrosion and do not demonstrate primary systemic toxicity. As a member of the isothiazolinone family and in a weight of evidence approach, the same conclusion must apply to OIT.

Reference:

Zuehlke U (1995): N-Octylisothiazolone (OIT) 94+/-3%: 90-Day Dermal Subchronic Toxicity Study in the Rat. Study number: 1154-051.

OIT TASK FORCE COMMENTS ON:**OCTHILINONE RE-EVALUATION DECISION DOCUMENT****Antimicrobials Exposure Assessment Task Force II Update:**

- A. Pour liquid-final report submitted to the PMRA a number of months ago. PMRA risk assessment group came back and requested data (unit exposure) data be provided in new spreadsheets and Has will be providing this to Sahar Farrar by end of next week.
- B. Pour Solid- amendments being prepared on this study and will be submitted in the next two months
- C. Brush/Roller- study completed summer of 2016. Preliminary handwash efficiency study completed June, 2017. Final report to be completed September, 2017. Next steps are submittal to EPA for HSRB evaluation and reporting. Depending on the HSRB review the final report could be available end 2017 or 1st quarter 2018. Note surrogate used was BIT. AT this point data are being QA audited. What is clear is that inhalation exposure was not detected in test subjects so the majority of efforts are involved with dermal exposure.
- D. Airless Spray study- protocol most recent approved by EPA. Next steps are EPA Human Studies Review Board review this fall, 2017. Study will be conducted in 2018. Note this study will address professional exposure whereas EPA agreed the brush/roller will be used to assess consumer exposure.

Airless Sprayer Brand name	Model(s)	PPE Statements
Airlessco	LP 555, LP655, Mustang 5150, Mustang 8150	Always wear appropriate gloves, eye protection, and a respirator or mask when painting. PERSONAL PROTECTIVE EQUIPMENT Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to: • Protective eyewear, and hearing protection. • Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer. 
Graco	Magnum models X5 (262800 Series D), X7 (262805 Series C), ProX7 (261815 Series B), ProX9 (261820 Series B)	Always wear appropriate gloves, eye protection, and a respirator or mask when painting. PERSONAL PROTECTIVE EQUIPMENT Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to: • Protective eyewear, and hearing protection. • Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer. 

Graco	Merkur ES Spray Packages	PERSONAL PROTECTIVE EQUIPMENT You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This equipment includes but is not limited to: • Protective eyewear, and hearing protection. • Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer. Read MSDSs to know the specific hazards of the fluids you are using. 
Husky	Gravity Feed Spray Gun	Use a face mask/respirator and protective clothing when spraying. Always spray in a well ventilated area to prevent health and fire hazards. Refer to Material Safety Data Sheets (MSDS) of spray material for details. Always wear eye protection.
Wagner	Pro 190, Pro 170, Pro 150	• Always wear appropriate gloves, eye protection, clothing and a respirator or mask when painting. • Use a respirator or mask if vapors can be inhaled. Read all instructions supplied with the mask to be sure it will provide the necessary protection. • Wear protective eyewear. • Wear protective clothing as required by coating manufacturer.

OIT TASK FORCE COMMENTS ON:

OCTHILINONE RE-EVALUATION DECISION DOCUMENT dated May 31, 2017

Summary of MSDS PPE statements:

Best and Worst Mildew-Resistant Paint per Consumer Reports:

We tested 24 brands of interior paint. You can see the results in our [interior paint ratings](#). All but three resisted mildew and are good candidates for bathrooms, laundry rooms, and other spaces that can become damp.

<http://www.consumerreports.org/interior-paints/mildew-resistant-paint-for-your-bathroom/>

Presented here are the Top (3) interior paint brands (per Consumer Reports) which resist mildew:

- **Behr Marquee from Home Depot**

From Section 8 of the MSDS:

Engineering Controls: Use appropriate engineering control such as process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Good general ventilation should be sufficient to control airborne levels. Where such systems are not effective wear suitable personal protective equipment, which performs satisfactorily and meets OSHA or other recognized standards. Consult with local procedures for selection, training, inspection and maintenance of the personal protective equipment.

Eye /Face Protection: Wear appropriate protective glasses or splash goggles as directed by 29CFR1910.133, OSHA eye and face protection regulation, or the European standard EN 166.

Skin Protection Description: Chemical-resistant gloves and chemical goggles, face -shield and synthetic apron or coveralls should be used to prevent contact with eyes, skin or clothing.

Respiratory Protection: A NIOSH approved air-purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

- **Valspar Reserve from Lowe's**

From Section 8 of the Paint Product MSDS:

Personal Protective Equipment

Eye/face protection: Wear safety glasses with side shields (or goggles).

Hand Protection: There is no one glove material or combination of materials that will give unlimited resistance to any individual or combination of chemicals. Ensure that the breakthrough time of the glove material is not exceeded. Refer to glove supplier for information on breakthrough time for specific gloves. The instructions and information provided by the glove manufacturer on use, storage, maintenance and replacement must be followed. Gloves should be replaced regularly

APPENDIX G (cont.)

and if there is any sign of damage to the glove material. Always ensure that gloves are free from defects and that they are stored and used correctly. The performance or effectiveness of the glove may be reduced by physical / chemical damage and poor maintenance. Wear protective gloves.

Skin and body protection: Wear suitable protective clothing.

Respiratory protection: When workers are facing concentrations above the exposure limit they must use appropriate certified respirators

- **Benjamin Moore Aura**

Engineering Measures: Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/Face Protection Safety glasses with side-shields.

Skin Protection Protective gloves and impervious clothing

Respiratory Protection In case of insufficient ventilation wear suitable respiratory equipment.

Hygiene Measures Avoid contact with skin, eyes and clothing. Remove and wash contaminated clothing before re-use. Wash thoroughly after handling.