UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF NEW YORK

ROBERT COENE and VALERIE COENE,

Plaintiffs,

v.

3M COMPANY, as successor by merger to Minnesota Mining & Manufacturing Company and/or its predecessors/successors in interest,

Defendant.

Case # 10-CV-6546-FPG

DECISION AND ORDER

INTRODUCTION

In this toxic tort action, Plaintiffs Robert Coene and Valerie Coene ("Plaintiffs") allege that Mr. Coene was exposed to crystalline silica, nylon, and resin dust at work while wearing a 3M 8710 disposable respirator, that the respirator failed to prevent Mr. Coene from inhaling this noxious dust, and that Mr. Coene contracted pneumoconiosis—an incurable and debilitating lung disease—as a result. Presently before the Court is a renewed motion for summary judgment filed by Defendant 3M Company ("3M"), the manufacturer of the 3M 8710. ECF No. 152. 3M argues that expert opinion testimony by Dr. William Meggs ("Dr. Meggs"), which was proffered by Plaintiffs as evidence that Mr. Coene was exposed to respirable crystalline silica, nylon, and resin while wearing the 3M 8710, is inadmissible under Federal Rule of Evidence 702 and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). For the reasons stated below, 3M's motion is denied.

BACKGROUND[1]

Mr. Coene worked as a technician for Eastman Kodak Company ("Kodak") in Rochester, New York from 1992 to 2002. At Kodak, Mr. Coene spent 80% of his time creating prototype camera parts through a process called selective laser sintering ("SLS"). From 1992 to 1998, Mr. Coene wore a 3M 8710 disposable respirator whenever he was performing SLS. It is Mr. Coene's SLS work at Kodak from 1992 to 1998 that forms the basis for this lawsuit.

I. The SLS Process

SLS is a type of additive manufacturing[2] in which a laser is used to turn layers of powdered material into a three-dimensional solid object by sintering only particular areas of each layer of the powder, binding that area of the material together and creating the finished product as more layers of powder are added and sintered. Kodak was the first beta test site for the SLS process and the first company to have an SLS machine. At Kodak, no other employee held the exact same position as Mr. Coene.

Mr. Coene's first responsibility during the SLS process was to load the SLS machine with powdered material. As relevant here, the powders used were DuraForm GF and LNC-7000. According to their Material Safety Data Sheets ("MSDSs"), DuraForm GF consists of 50% glass and 50% proprietary polymer resin; LNC-7000 consists of 50% glass and 50% nylon 11. The parties agree that the "glass" in the DuraForm GF and LNC-7000 powders was amorphous silica.[3] Katherine Root, a Senior Industrial Hygenist at Kodak, stated in an affidavit that Kodak did not use crystalline silica at the locations where Mr. Coene performed his work.

After loading the machine, Mr. Coene would slowly heat the powder to a temperature just below its melting point. Using the proper temperature was crucial to a successful part build. At

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[1] The following background facts are either undisputed or presented in the light most favorable to Plaintiffs.

[2] Additive manufacturing is also commonly known as "3D printing."

[3] Solids can be either amorphous or crystalline in structure. In amorphous solids, particles are disordered; in crystalline solids, particles are arranged in a repeating pattern. *See, e.g.*, ECF No. 153-7, Ojovan, Michael I., *Configurons: Thermodynamic Parameters And Symmetry Changes At Glass Transition*, 10 Entropy 335 (2008).

temperatures above 340° C, the DuraForm GF powder would disintegrate and burn away. At some temperatures below 340° C, a "meltdown" would occur and all the powder in the machine would turn into a solid block of burnt, yellowed, plastic material. Temperatures between 182° and 184° C were ideal.[4]

When the powder was pre-heated to the proper temperature, the SLS machine began building the object layer by layer. In accordance with a computer model, the laser would sinter particular areas of a thin layer of powder, binding the affected areas together but leaving the rest of the powder untouched.[5] As each new layer of powder was added, the laser created a new cross-section of the object.

Eventually, after the machine finished sintering and the material cooled down, Mr. Coene would remove the object from the machine and clean off excess powder with a brush and a sandblaster.[6] Some excess powder in the SLS machine would be reused, along with new powder, to build the next prototype part.

Mr. Coene testified that every step of the SLS process was dusty, especially loading and unloading powder from the machine. The lab required "constant cleaning" because "anything you did with the powders create[d] dust." Mr. Coene was responsible for cleaning up the lab and would use a special vacuum every time he loaded or unloaded the SLS machine. Even though Mr. Coene wore the 3M 8710 mask whenever he was working with powders, he could feel grit in his mouth and nose from the dust. Plaintiffs allege that the 3M 8710 failed to prevent Mr. Coene from inhaling the materials he was working with during the SLS process.

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[4] The MSDS for DuraForm GF states that its melting point is 170° C. The MSDS for LNC-7000 states that its melting point is 193° C.

[5] The parties have not presented evidence regarding the temperature of the laser during this part of the SLS process.

[6] Sandblasting is a way to clean a surface by blasting it with an abrasive material at high pressure. Plaintiff testified that he did not remember what abrasive material was used at Kodak, other than that it was "a white sandy material."

II. Diagnosis

In 2008, Dr. Daniel Maxwell diagnosed Mr. Coene with "silicosis with aggressive massive fibrosis."[7] Dr. Mary O'Connor, another one of Mr. Coene's treating physicians, concurred in that diagnosis.

Mr. Coene began seeing Dr. Jeffrey Marshick in 2009. Dr. Marshick concurred with the silicosis diagnosis and also diagnosed Mr. Coene with "obstructive lung disease." Based on a description of Mr. Coene's work at Kodak, Dr. Marshick made the following conclusion:

> Mr. Coene had workplace exposure to various fibrogenic producing dusts including silica, nylon and resin. These dusts can cause scarring of the lungs. Mr. Coene's scarring is classic for silicosis because it occurs exclusively in the upper lung zones. Other dusts, such as nylon powder, have also been found to cause fibrosis in the lung. Mr. Coene's exposures, in addition to a latency period of at least 15 years from the time of first exposure and the unique characteristics of his lung scarring, confirm that, in a reasonable medical probability, Mr. Coene suffers from silicosis and/or pneumoconiosis. Pneumoconiosis is in the same family as silicosis and usually involves exposure to silica and other dusts that can cause scarring. It is my opinon that Mr. Coene suffers from this occupational lung disease. There can be no doubt that the cause of Mr. Coene's lung disease is occupational.

In 2012, radiologist Dr. James Mastromatteo performed a follow-up CT scan of Mr. Coene's lungs and found that the obstructions in the upper lung zones were "in keeping with the clinical diagnosis of silicosis."

Pneumoconiosis is an umbrella term for inflammation and fibrosis in the lungs caused by the occupational inhalation of dust. Stedman's Medical Dictionary at 1522-23 (28th ed. 2006), *available at* Westlaw STEDMANS 702860. The degree of disability associated with pneumoconiosis depends on the particular types of particles inhaled and the level of exposure to them. *Id.* For the purpose of the instant motion for summary judgment, the parties do not dispute that crystalline silica, nylon, and resin, in respirable form, can cause pneumoconiosis.

[7] Fibrosis is the formation of fibrous (fiber-like) tissue as a reparative or reactive process. Stedman's Medical Dictionary at 726 (28th ed. 2006), *available at* Westlaw STEDMANS 332130. One common example of fibrosis is the formation of scar tissue in reaction to a wound.

Silicosis is a specific form of pneumoconiosis caused by exposure to—and inhalation of—crystalline silica. ECF No. 97, Ex. 10; Stedman's Medical Dictionary at 1773 (28th ed. 2006), *available at* Westlaw STEDMANS 821290. Unlike crystalline silica, amorphous silica on its own is generally not associated with silicosis or any other form of pneumoconiosis.

III. Dr. Meggs

A. Qualifications

Dr. Meggs is a medical doctor, clinician and researcher specializing in the area of human medical toxicology. He received a B.S. in physics from Clemson University, a Ph.D. in Physics from Syracuse University, and an M.D. from the University of Miami. He has practiced medicine since 1980, is currently licensed to practice medicine in the state of North Carolina, and is board-certified in the specialties of medical toxicology, emergency medicine, and allergy and clinical immunology. At East Carolina University's Brody School of Medicine, Dr. Meggs serves as Professor of Emergency Medicine, Senior Vice Chair for Academic Affairs, and Chief of the Division of Toxicology.

Dr. Meggs's clinical practice focuses on the diagnosis and treatment of people who have been exposed to toxic substances. However, he only encounters silicosis "episodically" in his clinical practice and testified at his deposition that it had been "a long time" since he had diagnosed a patient with silicosis. In 2010, he won the first ever research award from the American College of Medical Toxicologists for his outstanding contributions to the field of medical toxicology. His research focuses on "antidotes to poisonings, poisonous snakebites, toxicity of pharmaceutical overdoses, effects of chronic low level exposures to pesticides, and environmental factors in obesity."

In preparation for rendering an opinion in this case, Dr. Meggs reviewed Mr. Coene's medical records and deposition testimony, the MSDSs for the various powdered materials that

Mr. Coene worked with at Kodak, and technical literature on sintering and crystallization. Dr. Meggs also testified at his deposition that he spoke to Mr. Coene on the phone regarding the SLS process at Kodak and the temperature of the powders during that process.

B. Expert Reports

On March 28, 2013, Dr. Meggs submitted an expert report regarding the cause of Mr. Coene's silicosis. Dr. Meggs opined that Mr. Coene was exposed to respirable crystalline silica while performing SLS at Kodak and that this exposure caused him to contract silicosis. Notably, Dr. Meggs found that sintering caused the amorphous silica in powders such as DuraForm GF to crystalize into quartz and cristobalite—two forms of crystalline silica that are known to cause silicosis. Dr. Meggs stated in his report that "[i]t is a foregone conclusion that sintering causes crystallization."

On September 17, 2013, Dr. Meggs submitted a second expert report. In this second report, Dr. Meggs opined that Mr. Coene was exposed to respirable nylon and resin dust while performing SLS at Kodak and that such exposure "was a contributing factor to Mr. Coene's interstitial fibrosis."[8] According to Dr. Meggs, "it is apparent from the medical literature that both nylon and resin, in respirable form, have fibrogenic effects in the lung. The description of these fine powders as indicated in Mr. Coene's deposition reveal he was exposed to respirable forms of these ingredients." Dr. Meggs also noted that "these powders were heated to their melting point and therefore crystallized as demonstrated by the literature previously provided."

[8] The term "interstitial" means "[r]elating to spaces within a tissue or organ, but excluding such spaces as body cavities or potential space." Stedman's Medical Dictionary at 991 (28th ed. 2006), *available at* Westlaw STEDMANS 452030. In the context of this case, interstitial fibrosis refers to scarring in small areas within Mr. Coene's lungs. For the sake of simplicity, and because it does not affect the outcome of 3M's motion for summary judgment, the Court will use the term "pneumoconiosis" to refer to any scarring in Mr. Coene's lungs caused by exposure to respirable crystalline silica, nylon, or resin.

C. Deposition Testimony And Basis For Opinion

3M deposed Dr. Meggs twice and questioned him at length regarding the basis for his expert reports. With respect to his conclusion that the SLS process exposed Mr. Coene to respirable nylon and resin, Dr. Meggs relied on the MSDSs for the powders Mr. Coene used at Kodak. The MSDS for DuraForm GF (which consists of 50% amorphous silica and 50% proprietary polymer resin) states that "[d]ust from the DuraForm GF material is expected to be the primary hazard in an occupational exposure" and that "inhalation" is one of the primary routes of entry into the body. The MSDS further states that while "[n]o effects from chronic exposure are known," dust from DuraForm GF "may be irritating to the respiratory tract." Although neither party has presented evidence regarding the precise ingredients in the proprietary polymer resin, Dr. Meggs testified that all resins, as a class, cause respiratory irritation. As relevant here, the MSDS for LNC-7000 (which consists of 50% amorphous silica and 50% nylon 11) contains language that is identical to the language in the MSDS for DuraForm GF.

Dr. Meggs's testimony regarding Mr. Coene's potential exposure to respirable crystalline silica was more complicated. First, Dr. Meggs explained that although the powders Mr. Coene used at Kodak contained *amorphous* rather than crystalline silica, amorphous silica is rarely "pure" and generally contains up to 20% crystalline silica embedded in it. According to one of the published articles Dr. Meggs relies on, "[t]he major problem in the assessment of health effects of amorphous silica is its contamination with crystalline silica." Merget, R., et al., *Health Hazards Due To The Inhalation of Amorphous Silica*, Archives of Toxicology Vol. 75 Issue 11/12, 625-634 (Jan. 2002). On its own, the fact that amorphous silica contains some crystalline silica would not make the amorphous silica hazardous. But because the SLS process involves disturbing the amorphous silica by heating it to just below its melting point, striking it with a

laser, cooling it, and then sandblasting it, Dr. Meggs concluded that Mr. Coene was exposed to the harmful crystalline silica that was previously embedded in DuraForm GF and LNC-7000.

Second, Dr. Meggs testified that some of the amorphous silica in DuraForm GF and LNC-7000 transformed into crystalline silica through a process known as "devitrification." Devitrification is "the uncontrolled formation of crystals in glass during melting, forming, or secondary processing." ECF No. 97-6, Ex. 7, Encyclopedia of Chemical Technology, Vol. 12 at 567-69 (4th ed. 1994). The critical temperature range for devitrification to occur is "below the liquidus temperature,[9] but above the temperature where the glass is sufficiently viscous to retard devitrification." *Id.* The longer a glass is in that critical temperature range, the greater the number of crystals that are formed. *Id.*

At his deposition, the attorney for 3M asked Dr. Meggs what evidence he had that the process of devitrification actually occurred while Mr. Coene was performing SLS at Kodak. The attorney pointed out that there are no epidemiological[10] studies, case reports, or even anecdotal reports specifically linking the SLS process to devitrification or to pneumoconiosis. Dr. Meggs testified that the lack of such evidence is not surprising; given that SLS is a new technology and pneumoconiosis is a disease with a latency period, "you would expect the first case only to be showing up now." Dr. Meggs also indicated that workers in analogous industries such as the manufacturing and fabrication of ceramic products have been diagnosed with silicosis.

Dr. Meggs further responded that although he is not aware of any studies involving the same materials, temperature and process performed at Kodak, he could reasonably extrapolate from the relevant literature that devitrification did occur here. Specifically, Dr. Meggs relies on a series of published articles regarding the "competition" between sintering and crystallization

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[9] Liquidus temperature is the temperature above which a material is completely liquid. *Liquidus*, Oxford English Dictionary, *available at* http://www.oed.com/view/Entry/108925?redirectedFrom=liquidus&

[10] "Epidemiology is the study of disease patterns in human populations." *In re Joint E. & S. Dist. Asbestos Litig.*, 52 F.3d 1124, 1128 (2d Cir. 1995).

that occurs in glass over a range of temperatures. Prado, M.O., Fredericci, C., Zanotto, E.D., *Glass Sintering With Concurrent Crystallization*, 5 C. R. Chimie, 773-786 (2002); Prado, M.O., Fredericci, C., Zanotto, E.D., *Isothermal Sintering With Concurrent Crystallization Of Polydispersed Soda-Lime-Silica Glass Beads*, 331 J Non-Crystalline Solids, 145-156 (2003); Prado, M.O., Nascimento, M.L.F., Zanotto, E.D., *On The Sinterability Of Crystallizing Glass Powders*, 354 J Non-Crystalline Solids, 4589-4597 (2008).

The 2008 article provides some background on that "competition":

> Once a glass powder compact is heated above the glass transition temperature, T_g,[11] a race between sintering and crystallization begins. The powder's surface area and its associated surface energy tend to degrease through sintering, but a concurrent process, predominant surface crystallization in most glasses (or internal crystallization in a few glasses) also takes place to decrease the overall free energy of the glass transforming it into a polycrystalline material. Therefore, there are two simultaneous pathways for the system's free energy decrease, each one with its own kinetics: viscous flow sintering and crystallization.

In other words, when a glass powder is heated enough to change the material from hard to soft, both sintering and crystallization occur simultaneously.

In the 2003 article, the authors heated soda-lime-silica glass beads to 680, 690, 700, 800, and 840 °C in an electric furnace[12] and used the results to test the accuracy of a descriptive model. The authors noted that "[c]rystallization is a determining factor that hinders further sintering at low temperatures" and confirmed that "higher temperatures favor sintering over crystallization."

In the 2008 article, the authors defined a variable "that is capable of predicting if a glass powder compact can be fully densified by viscous flow sintering or if concurrent surface

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[11] "Amorphous materials can be either solid (glassy) or liquid (melts)." *See, e.g.*, ECF No. 153-7, Ojovan, Michael I., *Configurons: Thermodynamic Parameters And Symmetry Changes At Glass Transition*, 10 Entropy 335 (2008). The glass-liquid transition is the transition from a hard and brittle "glassy" state into a soft or rubbery state as the temperature is increased. The glass-transition temperature, T_g, is the temperature at which this transition occurs. *Johnson & Johnson Vision Care, Inc. v. CIBA Vision Corp.*, 648 F. Supp. 2d 1294, 1324 (M.D. Fla. 2009).

[12] Dr. Meggs testified that although the authors did not heat the glass powder with a laser in their experiments, "the lungs don't care how the particles are produced. If you heat it in the oven or heat it with a laser, they don't care."

crystallization will hinder densification." The authors concluded that "*as long as the heating rate is fast enough to avoid crystallization* on the heating path, . . . any glass powder can be fully densified *at a sufficiently high temperature*, especially near and above the *liquidus*. But too high temperatures lead to excessive flow and deformation of the compact." (emphasis added).

Lastly, the attorney for 3M pointed out that the dose and duration of Mr. Coene's potential exposure to toxic dust while wearing the 3M 8710 respirator has not been quantified. Dr. Meggs responded that it would be "nice" to have quantitative data regarding the precise amount of crystalline silica, nylon, and resin that Mr. Coene was exposed to, but such information is not necessary to diagnose Mr. Coene with pneumoconiosis or to conclude that Mr. Coene's lung scarring was caused by his exposure to toxic dust while wearing the 3M 8710. Dr. Meggs's position is supported by Murry and Nadel's Textbook of Respiratory Medicine, which explains that people have individualized reactions to exposure:

> Although exposure-response relationships generally describe the events in a work force, there may be heavily exposed individuals who remain unaffected and lightly exposed individuals with disease. . . . Thus, a clinician should not reject the diagnosis of pneumoconiosis solely on the grounds that exposure was too remote, too short, or in a workplace where the threshold limit value was maintained. The subject in question may be unusually susceptible, may have had an unusual exposure profile, or may retain more dust than others similarly exposed.

ECF No. 97-10, Ex. 11, at 2. Because "Mr. Coene's lungs show a picture consistent with silicosis, and we have no other evidence in his workplace of any other exposure that could have created that picture," Dr. Meggs concluded that Mr. Coene's lung scarring was caused by his exposure to crystalline silica at Kodak.

LEGAL STANDARD

Summary judgment shall be granted "if the movant shows that there is no genuine dispute as to any material fact and that the moving party is entitled to a judgment as a matter of law." Fed. R. Civ. P. 56(a). On the other hand, the non-moving party may defeat a summary judgment

motion by producing sufficient specific facts to establish that there is a genuine issue of material fact for trial. *Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986).

When reviewing a motion for summary judgment, the court must resolve genuinely disputed facts in favor of the non-moving party and must view inferences to be drawn from the facts in the light most favorable to the non-moving party. *Adickes v. S. H. Kress & Co.*, 398 U.S. 144, 158-59 (1970). However, a party may not "rely on mere speculation or conjecture as to the true nature of the facts to overcome a motion for summary judgment." *Knight v. U.S. Fire Ins. Co.*, 804 F.2d 9, 12 (2d Cir. 1986).

DISCUSSION

Plaintiffs have asserted claims against 3M sounding in product liability, breach of warranty, negligence, fraud, and loss of consortium. ECF No. 1. 3M argues that all of Plaintiffs' claims suffer from the same fatal flaw: expert testimony by Dr. Meggs, which Plaintiffs rely on to show that Mr. Coene was exposed to respirable crystalline silica, nylon and resin while wearing the 3M 8710, is inadmissible under Federal Rule of Evidence 702 and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). ECF No. 152.

Rule 702 provides as follows:

> A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:
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> a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
> b) the testimony is based on sufficient facts or data;
> c) the testimony is the product of reliable principles and methods; and
> d) the expert has reliably applied the principles and methods to the facts of the case.

Fed. R. Evid. 702. The Supreme Court in *Daubert* interpreted Rule 702 as a rejection of the traditional *Frye* rule, under which courts required that an expert's theory be generally accepted by the scientific community in order to be admissible. *Daubert*, 509 U.S. at 585-89; *Zuchowicz v. United States*, 140 F.3d 381, 386 n.5 (2d Cir. 1998); *see Frye v. United States*, 293 F. 1013,

1014 (D.C. Cir. 1923). Rather, under Rule 702 and *Daubert*, district courts serve a gatekeeping function and are tasked with determining whether a witness is qualified to provide an expert opinion on the issue at hand, whether the opinion is based on reliable data and methodology, and whether the testimony is relevant and will assist the trier of fact. *Nimely v. City of N.Y.*, 414 F.3d 381, 396-97 (2d Cir. 2005). The inquiry envisioned by Rule 702 is a flexible one and must be tied to the facts of a particular case. *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 150-153 (1999). In this context, the law grants the district court broad latitude "to ensure that the courtroom door remains closed to junk science while admitting reliable expert testimony that will assist the trier of fact." *Amorgianos v. Nat'l R.R. Passenger Corp.*, 303 F.3d 256, 265 (2d Cir. 2002); *Stagl v. Delta Air Lines, Inc.*, 117 F.3d 76, 81 (2d Cir. 1997) ("The admission and qualification of experts pursuant to Federal Rule of Evidence 702 is in the broad discretion of the district court.").

Here, Dr. Meggs intends to testify that Mr. Coene was exposed to toxic dust while performing the SLS process at Kodak and that such exposure caused him to contract silicosis or some other form of pneumoconiosis. 3M argues that Dr. Meggs's proffered testimony should be excluded for two reasons: (1) Dr. Meggs is not qualified to provide an expert opinion regarding whether the SLS process exposed Mr. Coene to toxic dust, and (2) Dr. Meggs's testimony is unreliable. The Court will address those arguments in turn.

I. Qualifications

Under Rule 702, a witness may be qualified to render expert testimony in any one of the following five ways: knowledge, skill, experience, training, or education. Fed. R. Evid. 702. Given this liberal standard, the test for exclusion is a strict one. *Sullivan v. Ford Motor Co.*, No. 97-CV-0593, 2000 WL 343777, at *4-5 (S.D.N.Y. Mar. 31, 2000) (quoting *Thomas J. Kline, Inc. v. Lorillard, Inc.*, 878 F.2d 791, 799 (4th Cir. 1989)). Although an expert witness should not be

permitted to stray beyond the "reasonable confines" of his or her expertise to render an opinion on an entirely different field or discipline, *see, e.g.*, *Morritt v. Stryker Corp.*, 973 F. Supp. 2d 177, 188 (E.D.N.Y. 2013), a witness is not disqualified simply because he or she lacks specialized expertise that is narrowly tailored to the product or process at issue. *Nisanov v. Black & Decker (U.S.) Inc.*, No. 05-CV-5911, 2008 WL 906708, at *3 (E.D.N.Y. Apr. 3, 2008); *McCullock v. H.B. Fuller Co.*, 61 F.3d 1038, 1043 (2d Cir. 1995) (requiring specialization would be "an unwarranted expansion of the gatekeeper role announced in *Daubert*"); *see also Canino v. HRP, Inc.*, 105 F. Supp. 2d 21, 27 (N.D.N.Y. 2000); *In re Zyprexa Prod. Liab. Litig.*, 489 F. Supp. 2d 230, 282 (E.D.N.Y. 2007) (citing *Stagl*, 117 F.3d at 80); *Davids v. Novartis Pharm. Corp.*, 857 F. Supp. 2d 267, 277 (E.D.N.Y. 2012) ("In a product liability action, an expert witness is not strictly confined to his area of practice, but may testify concerning related applications; a lack of specialization affects the weight of the opinion, not its admissibility.") (quoting *Rupolo v. Oshkosh Truck Corp.*, 749 F. Supp. 2d 31, 37 (E.D.N.Y. 2010)).

After reviewing Dr. Meggs's expert reports, CV, and deposition testimony, the Court concludes that Dr. Meggs is well qualified to render an expert opinion in this case. Dr. Meggs is a licensed medical doctor and board-certified toxicologist with both a B.S. and a Ph.D. in physics. As noted in a previous decision in this case, toxicology is "the science of poisons." *Coene v. 3M Co.*, 303 F.R.D. 32, 55 (W.D.N.Y. 2014) (quoting *Mancuso v. Consol. Edison Co. of N.Y.*, 967 F. Supp. 1437, 1445 (S.D.N.Y. 1997)). In toxic tort cases, toxicologists are routinely called upon to assist the fact-finder in evaluating "the causal probability that an adverse event with potentially many causes is caused by a specific agent." *Id.* (quoting Federal Judicial Center, Reference Manual on Scientific Evidence 635 (3d ed. 2011)). "Typically, the basis of a toxicologist's expert opinion will be a thorough review of the research literature and treatises concerning effects of exposure to the chemical at issue, as well as the expert's application of

fundamental concepts of toxicology relevant to understanding the actions of chemicals in biological systems." *Id.* (quoting Federal Judicial Center, Reference Manual on Scientific Evidence 675 (3d ed. 2011) (internal quotations omitted).

Dr. Meggs serves as Chief of the Division of Toxicology at East Carolina University's Brody School of Medicine and was awarded by the American College of Medical Toxicologists for his outstanding contributions to medical toxicology. He is also an experienced and active practicing physician whose current clinical practice focuses on the diagnosis and treatment of people who have been exposed to toxic substances. In preparation for rendering his opinion in this case, Dr. Meggs reviewed Mr. Coene's medical records and deposition testimony, spoke with Mr. Coene about the SLS process and the temperature of the powders during that process, reviewed the Material Safety Data Sheets for the various powdered materials that Mr. Coene worked with at Kodak, and reviewed relevant technical literature on sintering and crystallization.

3M raises some legitimate criticisms regarding the fit between Dr. Meggs's expertise and his proffered testimony in this case. For example, Dr. Meggs does not study, teach, or give presentations on topics that are specifically relevant to his proffered testimony. At his deposition, he testified that he only encounters silicosis "episodically" in his clinical practice and that it had been "a long time" since he had diagnosed a patient with silicosis. Similarly, Dr. Meggs's CV does not indicate any specialized knowledge or expertise regarding the 3D printing industry or the SLS process in particular. Expertise in silicosis, the SLS process, lasers, advanced chemistry, and industrial hygiene would certainly be helpful and relevant to Plaintiffs' theory of causation in this case. But under Rule 702 and *Daubert*, the question regarding a witness's threshold qualification to provide expert testimony is not whether that witness would be the best possible person to opine on the precise issue at hand; "quibbles" regarding a witness's qualifications go to the weight and credibility of the expert testimony, not its admissibility.

Canino, 105 F. Supp. 2d at 28 (citing *McCullock*, 61 F.3d at 1043-44); *see also Stagl*, 117 F.3d at 81-82. After reviewing Dr. Meggs's expert reports, CV, and deposition testimony, the Court concludes that he is qualified to render an expert opinion in this case.

II. Reliability

With respect to the threshold reliability of expert testimony, Rule 702 requires that (1) the testimony is based on sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the expert has reliably applied the principles and methods to the facts of the case. Fed. R. Evid. 702. The district court's analysis under Rule 702 should be in keeping with the "liberal thrust" of the Federal Rules of Evidence and mindful of the fact that "[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence." *Daubert*, 509 U.S. at 596. On the other hand, "nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert." *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997).

In *Daubert*, the Supreme Court identified the following factors bearing on reliability that district courts may consider: (1) whether the theory or technique can be (and has been) tested, (2) whether the theory or technique has been subjected to peer review and publication, (3) the known or potential rate of error, and (4) whether the theory or technique has gained general acceptance in the relevant scientific community. *Daubert*, 509 U.S. at 593-95. These factors do not, however, constitute a "definitive checklist or test." *Amorgianos*, 303 F.3d at 266 (quoting *Daubert*, 509 U.S. at 593). Indeed, given the flexible nature of the inquiry under Rule 702, certain *Daubert* factors may not apply in some cases. *Kumho Tire*, 526 U.S. at 151 ("It might not be surprising in a particular case, for example, that a claim made by a scientific witness has

never been the subject of peer review, for the particular application at issue may never previously have interested any scientist."); *see also Daubert*, 509 U.S. at 593 (noting that some propositions "are too particular, too new, or of too limited interest to be published").

Where an expert reaches his or her conclusion by extrapolating from existing data, the testimony may be unreliable if there is "simply too great an analytical gap between the data and the opinion proffered." *Joiner*, 522 U.S. at 146. At the same time, it is not necessary for an expert to "back his or her opinion with published studies that unequivocally support his or her conclusions." *Amorgianos*, 303 F.3d at 266. In *McCullock*, for example, the Second Circuit affirmed the admission of expert testimony despite the fact that the expert "could not point to a single piece of medical literature" that specifically supported his opinion. *McCullock*, 61 F.3d at 1043. "A minor flaw in an expert's reasoning or a slight modification of an otherwise reliable method will not render an expert's opinion *per se* inadmissible." *Amorgianos*, 303 F.3d at 267.

Here, the Court is satisfied that Dr. Meggs's proffered testimony is sufficiently reliable to be admitted under Rule 702 and *Daubert*. There is no dispute that inhaling crystalline silica, nylon, and resin can cause the type of lung scarring that Mr. Coene's treating physicians have diagnosed him with. As to whether the SLS process performed at Kodak was capable of exposing Mr. Coene to those materials and actually did so in this case, Dr. Meggs reasonably extrapolated from reliable sources and connected his opinion to the evidence in the record.

According to their MSDSs, DuraForm GF contains 50% amorphous silica and 50% proprietary polymer resin; LNC-7000 contains 50% amorphous silica and 50% nylon 11. The MSDSs for those products further state that dust is the primary hazard in an occupational exposure, that inhalation is one of the primary anticipated routes of entry into the body, and that the dust may be irritating to the respiratory tract. The MSDSs comport with Mr. Coene's description of the SLS process as very dusty and his testimony that he could feel grit in his nose

and mouth even while he was wearing the 3M 8710 respirator. Thus, there is sufficiently reliable evidence to conclude that Mr. Coene was exposed to resin and nylon in respirable form.

To show that the SLS process exposed Mr. Coene to respirable *crystalline* silica, Dr. Meggs relies on two principles that appear well-established in the relevant scientific literature: (1) amorphous silica is generally contaminated with some crystalline silica, and (2) amorphous silica crystallizes as it sinters via a process called devitrification. The evidence Dr. Meggs relies on regarding devitrification includes a series of published articles in peer-reviewed journals and an explanation of devitrification in the Encyclopedia of Chemical Technology. These sources demonstrate that sintering and crystallization occur simultaneously as glass is heated above its glass-transition temperature but below the liquidus. The longer a glass is in that critical temperature range, the greater the number of crystals that are formed. To avoid or minimize the formation of crystals, the glass must be heated quickly to a high temperature above the liquidus.

The glass powders used at Kodak were subjected to conditions that appear to be ideal for devitrification. Mr. Coene testified that during the SLS process, he heated the glass powder slowly until it reached a temperature just below its melting point. The laser then sintered the powder to form a cross-section of the prototype camera part that Mr. Coene was building. After the sintering was finished, Mr. Coene let the materials cool before removing the object from the SLS machine and cleaning it. Given the evidence in the record regarding how the SLS process was performed at Kodak, Dr. Meggs reasonably extrapolated from the relevant scientific literature and concluded that Mr. Coene was exposed to crystalline silica dust.

Again, 3M has raised some legitimate criticisms regarding Dr. Meggs's analysis. Dr. Meggs could not cite to any epidemiological studies or case reports specifically linking the SLS process with silicosis or any other form of pneumoconiosis. None of the published studies Dr. Meggs relies on involved the particular materials, process, or temperatures at issue in this case,

and Dr. Meggs has not performed any of his own experiments to prove that devitrification occurred during the SLS process as it was performed at Kodak. Although the MSDSs for DuraForm GF and LNC-7000 indicate melting points, those products each consist of multiple components and Dr. Meggs has not specifically verified or proven that *all* of the components of those powders melt once the "melting point" is reached. Even assuming Mr. Coene was exposed to some toxic dust, Dr. Meggs does not have quantitative data regarding the precise extent of Mr. Coene's exposure.

At his deposition, however, Dr. Meggs had a rebuttal for most of 3M's criticisms. For example, the lack of epidemiological evidence or case reports linking SLS to silicosis is explained by the fact that SLS is a new technology and silicosis is a disease with a latency period. Although Dr. Meggs does not have quantitative data regarding the precise amount of toxic material Mr. Coene was exposed to, such information is not necessary to diagnose Mr. Coene with silicosis or conclude that Mr. Coene's lung scarring was caused by his exposure to toxic dust while wearing the 3M 8710. With respect to temperature, the point at which devitrification occurs depends on the substance involved and the properties of that substance—so it is natural to expect a study involving different materials to show crystallization at different temperatures.

More importantly, 3M's criticisms are not enough to render Dr. Meggs's proffered testimony inadmissible. Under Rule 702 and *Daubert*, an expert need not "back his or her opinion with published studies that unequivocally support his or her conclusions." *Amorgianos*, 303 F.3d at 266; *see also McCullock*, 61 F.3d at 1043. The Court must keep in mind the "liberal thrust" of the Federal Rules of Evidence and the fact that "[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence." *Daubert*, 509

U.S. at 596. After reviewing Dr. Meggs's expert reports, the evidence submitted in support of his conclusions, and his deposition testimony, the Court concludes that Dr. Meggs's testimony is sufficiently reliable to satisfy Rule 702 and *Daubert*.

CONCLUSION

In sum, the Court finds that Dr. Meggs's proffered testimony is admissible under Rule 702 and *Daubert*. 3M's critiques regarding Dr. Meggs's qualifications and the reliability of his testimony are best reserved for cross-examination, not summary judgment. Therefore, 3M's motion for summary judgment (ECF No. 152) is DENIED. The parties are directed to appear before the Court on April 10, 2017 at 2:30 PM for a status conference to set a trial date.

IT IS SO ORDERED.

Dated: March 20, 2017
Rochester, New York

HON. FRANK P. GERACI, JR.
Chief Judge
United States District Court