

Death due to Fractal Woodburning: An Emerging Public Health Problem

CONCLUSION

Fractal woodburning has caused high-voltage electrical injuries and death, predominantly among adolescent and young adult males. News media and non-medical organizations have been identifying these risks since 2016

SIGNIFICANCE

Fractal woodburning is associated with devastating high-voltage electrical injuries and death. American Burn Association prevention efforts should include education about the potential for death and permanently disabling injuries from this art form

INTRODUCTION

- Improvised high-voltage electrical devices can be used to create fractal wood art
- Demonstrations of this technique are widely available on social media, with little attention given to the risks of manipulating high-voltage electricity
- The morbidity and mortality of this technique are not described in the literature

METHODS

- Case report: 17 year old male with 5% high-voltage electrical injury sustained while experimenting with microwave transformer to create fractal wood art
- Review of 25 cases of injury or death, as reported by the American Association of Woodturners (AAW) and verified with news media reports where available

RESULTS

- 17 year old male with 5% high-voltage electrical injury to anterior neck, left chest, bilateral upper arms, forearms, and hands
 - Immediate fasciotomies of bilateral upper extremities
 - Serial debridement, delayed primary closure of anterior neck
 - Serial debridement, split thickness autografts to chest, bilateral upper arms and forearms
 - Extensive staged reconstruction of bilateral hands
- 20 reported deaths
 - 19 males (95%), 1 female; 16 younger than 50 years old (80%)
- 5 reported injuries
 - 4 males (80%), 1 female; all younger than 50 years old

Table 1: Deaths due to fractal woodburning

Date of Incident	Age in Years	Gender	Country	Transformer Source	Voltage
7/2/16	32	M	USA	unknown	unknown
5/4/17	47	M	USA	unknown	unknown
5/22/17	39	M	USA	unknown	unknown
2/27/17	43	M	UK	microwave	unknown (estimated 2000+)
1/6/18	28	M	USA	unknown	unknown
3/1/18	36	M	USA	unknown	unknown
3/21/18	47	M	Australia	unknown	2000
11/12/18	32	M	USA	unknown	unknown
7/12/18	57	M	USA	unknown	unknown
11/11/18	37	M	USA	unknown	unknown
12/17/18	68	M	USA	microwave	unknown
12/15/18	35	M	USA	unknown	unknown
1/10/19	60s	M	USA	unknown	unknown
1/16/19	38	M	USA	possible microwave	2000
1/22/19	32	M	USA	unknown	unknown
2/20/19	38	M	USA	unknown	unknown
7/11/19	39	M	USA	unknown	unknown
9/26/19	42	M	USA	possible microwave	unknown
12/5/19	36	F	USA	microwave	unknown
1/7/20	63	M	USA	unknown	unknown

Table 2: Injuries due to fractal woodburning

Date of Incident	Age in Years	Gender	Country	Transformer Source	Voltage	Injuries Reported by News Media
3/28/17	17	M	USA	unknown	unknown	finger amputations, chest burns
4/2/16	43	F	USA	microwave	unknown	partial finger amputations, extensive thumb reconstruction
12/6/18	30-40s	M	USA	unknown	2000	cardiac arrest
5/1/19	teens	M	USA	unknown	unknown	cardiac arrest, hand burns
11/29/19	40	M	USA	unknown	unknown	cardiac arrest, hand burns

LESSONS LEARNED

- No current literature, despite news media reports of medical attention
- Social media may spread dangerous trends rapidly
- News media may under-report deaths and injuries
- Coordinated efforts required to identify current and future trends, prevent harm



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