

High-Level Accessibility Evaluation (WCAG 2.1)

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Prepared for:

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TABLE OF CONTENTS

SUMMARY	3
Top Findings	3
Best Practices	3
ACCESSIBILITY FINDINGS	4
1. Initial Interface	4
2. Search Results	5
3. Individual Results	6

SUMMARY

This report reflects the findings of a high-level assessment of Elsevier's ScienceDirect platform for its conformance with the W3C Web Content Accessibility Guidelines version 2.1 (WCAG 2.1).

There are very few WCAG 2.1 compliance issues with the platform, and the few that are present are programmatic in nature and should be relatively easy to fix. However, creating an accessible platform is a constantly moving goalpost, so it is important to keep in mind that there are continual updates to the WCAG standards that may require more work in the future. Below are the most critical issues to focus on correcting to improve access for all potential users of the system.

Top Findings

1. **Compatibility:** There are very few issues with this system overall and the only compliance issue that stands out is around the use of unique id's. This is a relatively minor issue and is primarily programmatic and should not cause a serious problem with usability or accessibility. For an in-depth guide to ARIA implementation, please see the [WAI-ARIA Authoring Best Practices Guide from W3](#).
2. **Keyboard Accessible and Navigable:** Overall, the site does an excellent job of supporting users that require the use of keyboards to navigate, but the tables within articles do not seem to follow a standard behavioral pattern for navigation. Keep in mind that standard HTML tables are compliant.
3. **Color Contrast:** There are a few minor contrast issues that were flagged by software analysis and one that was flagged by expert review. Manual review is recommended to check hex codes to ensure color compliance, especially for the focus ring. Consider reviewing the [WCAG 2.2 Draft](#) for upcoming guidelines on focus rings.

Best Practices

Simple corrections that can make a sizable difference.

- ◆ All page content should be contained by landmarks.
- ◆ Links with the same name should go to the same place.
- ◆ See, [Scope Attribute](#) for correct usage.

ACCESSIBILITY FINDINGS

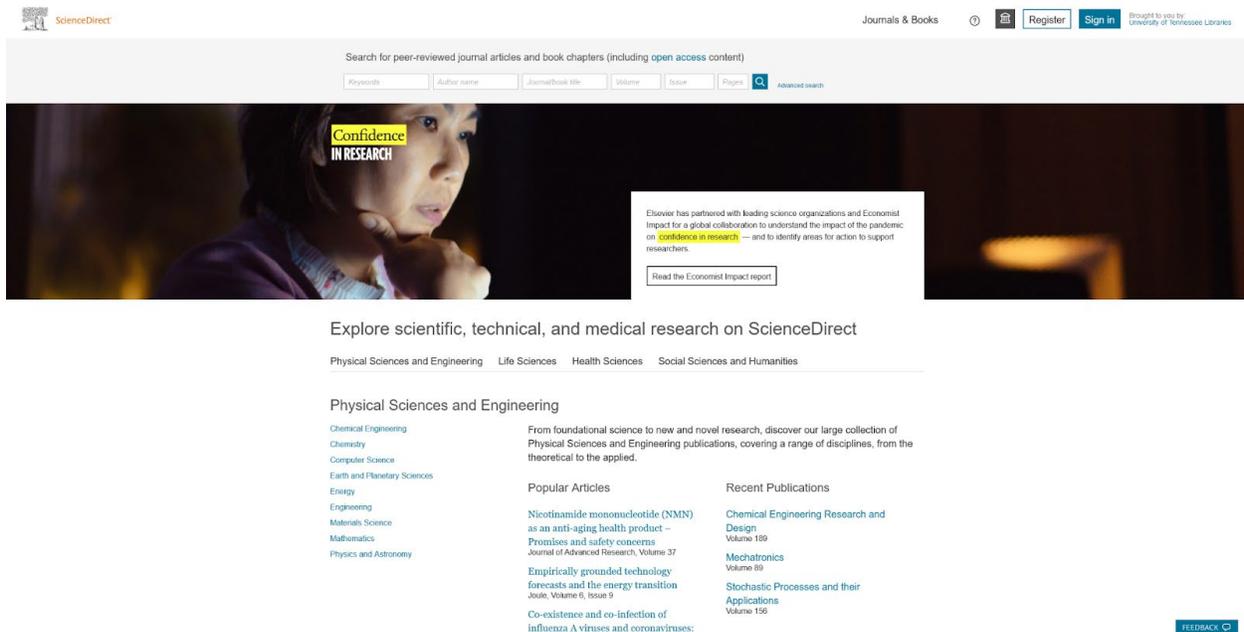
This report was conducted against the ScienceDirect platform and covers a selection of pages and features that were to be tested as a representative sample of the database’s conformance to the WCAG 2.1 AA standards.

The resource was reviewed using a combination of manual and automatic review tools and assistive technologies, including the WAVE Accessibility Assessment tool, Axe Accessibility Assessment tool, WCAG Color Contrast Checker, and NVDA screen reader. All problems identified by automatic tools were double checked manually. This evaluation was performed using Firefox on Windows 10.

Below are the errors revealed during the accessibility evaluation of ScienceDirect. **Flagged issues** should be reviewed manually for accuracy as addressing these would create stronger code.

1. Initial Interface

Test Case: Test initial interface/landing page to ensure menus, sub-menus, search box, images, icons, etc. are accessible.



SC 1.4.3: Elements must have sufficient color contrast.

- This issue has multiple locations throughout the page.

Flagged Issues

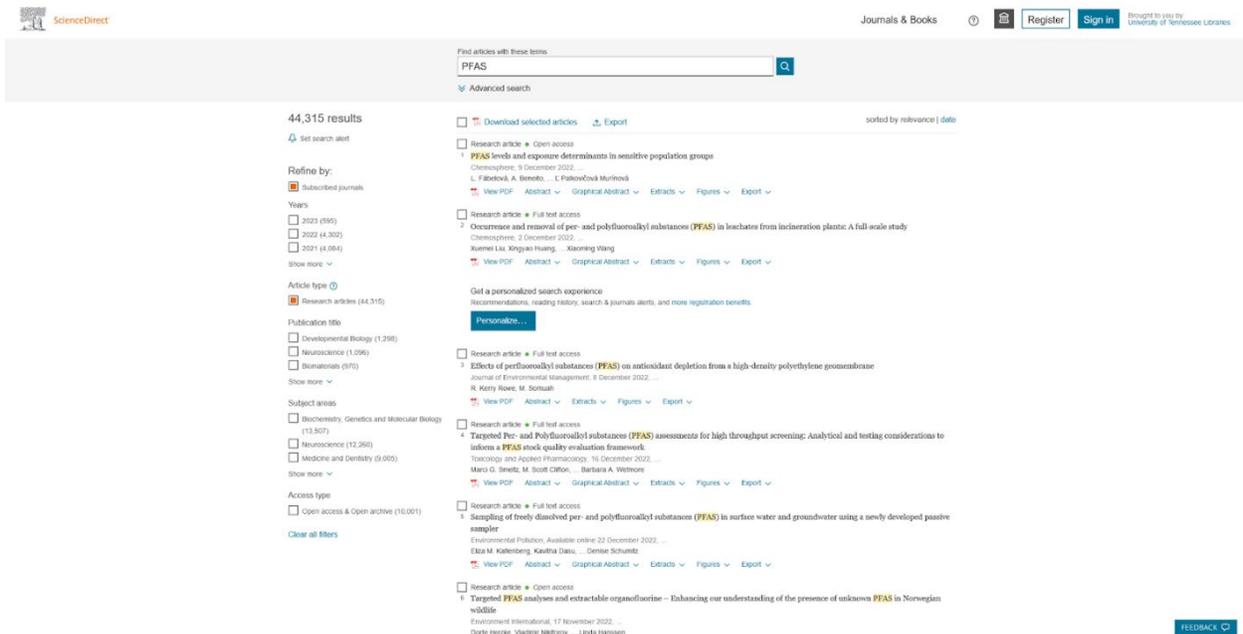
- While this was not flagged by automatic analysis, it is important to note that the focus ring being orange can make it difficult to ensure that contrast is compliant. Consider changing the focus ring color to a compliant blue or just allow the browser default focus ring.

SC 2.4.9: Links with the same name must have a similar purpose.

- .tab-elements.browse-quicklinks-item.u-padding-s-right
- .tabs-selected
- a[href\$="#health-sciences"]
- .tab-elements.browse-quicklinks-item.u-padding-s-hor:nth-child(5)

2. Search Results

Test Case: From the initial landing page, conduct a search for PFAS. Test search results page, including filters/refine search. Check box to limit to Subscribed journals. Check box to limit to Content Type = Research article



SC 1.3.1: Information, structure, and relationships conveyed through presentation can be programmatically determined or are available in text.

- The location could not be determined programmatically.

Flagged Issues

- The screen reader reads part of the alert, then skips to the navigation, and then skips back to the rest of the alert at a certain point.

SC 1.4.3: Elements must have sufficient color contrast.

- This issue has multiple locations throughout the page.

Flagged Issues

- Element's background color could not be determined because it is overlapped by another element.

SC 2.4.9: Links with the same name must have a similar purpose.

- `.download-link[aria-describedby="title-S0045653522040231"][target="_blank"]`

SC 4.1.2: Elements must only use allowed ARIA attributes.

- `.facet-container`
- `#srp-sorting-options > .sort-options > .anchor[data-aa-region="srp-sorting-options"][data-aa-name="srp-sortedby-date"] > .anchor-text[aria-label="Sort by date"]`

Flagged Issues

- `aria-label` attribute is not well supported on a div with no valid role attribute.
- `aria-label` attribute is not well supported on a span with no valid role attribute.

3. Individual Results

Test Case: Select an individual result “Longitudinal measurements of per- and poly-fluoroalkyl substances (PFAS) in archived human serum samples between 1975 and 1995 in Australia” & test result landing page & article full text, including tables and figures.

The screenshot shows the article page for 'Longitudinal measurements of per- and poly-fluoroalkyl substances (PFAS) in archived human serum samples between 1975 and 1995 in Australia' in the Journal of Hazardous Materials. The page includes a navigation sidebar on the left with sections like Outline, Highlights, Abstract, and Keywords. The main content area features the article title, authors (Sander Heister, et al.), a 'Show more' button, and a 'Highlights' section with three bullet points: 'Three repeated PFAS measurements (between 1975 and 1995) in human serum in Australia.', 'Increase in PFAS serum concentrations occurred particularly between 1975 and 1995.', and 'Assessing archived serum samples is valuable to understand past exposure.' Below the highlights is an abstract starting with 'Per- and poly-fluoroalkyl substances (PFAS) are a group of manmade compounds produced since the 1950s and used in a range of industrial processes and consumer products. In Australia, PFAS serum concentrations have been measured in the general population since 2002. However, few studies have retrospectively measured PFAS concentrations in serum samples representative of a general population prior to 2000, none of which have been conducted in Australia. To understand the general population's exposure to PFAS prior to 2002, longitudinal PFAS serum concentration measurements are required. In the current study, we...'. The right sidebar contains 'Recommended articles' and 'Article Metrics'.

SC 1.3.1: Information, structure, and relationships conveyed through presentation can be programmatically determined or are available in text.

- The location could not be determined programmatically.

Flagged Issues

- The screen reader reads part of the alert, then skips to the navigation, and then skips back to the rest of the alert at a certain point.

SC 2.1.1: Scrollable region must have keyboard access.

- .groups

Flagged Issues

- Ensure elements that have scrollable content are accessible by keyboard.
 - The user should have the ability to scroll in the table and the table cells should be focusable with a focus indicator.
- Ensure tables have contrast compliant dividers between table cells.

SC 2.4.9: Links with the same name must have a similar purpose.

- .publication-title-link
- #fig0015 > span > .links-for-figure > li:nth-child(2) > .download-link[title="Download full-size image"][download=""]
- #othref0005 > .ReferenceLinks.u-font-sans > .link[rel="noopener noreferrer"][target="_blank"]
- .link[aria-describedby="ref-id-sbref1"][rel="noopener noreferrer"]:nth-child(2)
- .link[aria-describedby="ref-id-sbref2"]:nth-child(1)
- #sbref2 > .ReferenceLinks.u-font-sans > .pdf.anchor[rel="nofollow"]

SC 4.1.1: IDs used in ARIA and labels must be unique.

- .u-display-block > ul > .SidePanelItem:nth-child(1) > .sub-heading > a > .article-title.text-s.ellipsis
- .u-display-block > ul > .SidePanelItem:nth-child(1) > div[aria-hidden="true"]
- .u-display-block > ul > .SidePanelItem:nth-child(2) > .sub-heading > a > .article-title.text-s.ellipsis
- .u-display-block > ul > .SidePanelItem:nth-child(2) > div[aria-hidden="true"]
- .u-display-block > ul > .SidePanelItem:nth-child(3) > .sub-heading > a > .article-title.text-s.ellipsis
- .u-display-block > ul > .SidePanelItem:nth-child(3) > div[aria-hidden="true"]

Flagged Issues

- Document has multiple elements referenced with ARIA with the same id attribute: recommended-articles-article0-title
- Document has multiple elements referenced with ARIA with the same id attribute: recommended-articles-article0

- Document has multiple elements referenced with ARIA with the same id attribute: recommended-articles-article1-title
- Document has multiple elements referenced with ARIA with the same id attribute: recommended-articles-article1
- Document has multiple elements referenced with ARIA with the same id attribute: recommended-articles-article2-title
- Document has multiple elements referenced with ARIA with the same id attribute: recommended-articles-article2

SC 4.1.1: id value attribute must be unique.

- `button[name="bau0005"] > .content > .author-ref`
- `button[name="bau0015"] > .content > .author-ref`
- `button[name="bau0025"] > .content > .author-ref`
- `div[aria-describedby="recommended-articles-header"] > .u-display-block`
- This issue was flagged due to the following, and should be reviewed manually for accuracy:

Flagged Issues

- Document has multiple static elements with the same id attribute: baff0005
- Document has multiple static elements with the same id attribute: baff0010
- Document has multiple static elements with the same id attribute: baff0020
- Document has multiple static elements with the same id attribute: recommended-articles

Disclaimer: This high-level evaluation was conducted for the Library Accessibility Alliance, and represents a good faith effort conducted within a limited time frame. It should not be assumed to be complete or free from error. No warranties or guarantees are implied. UT is not responsible for direct, indirect, or incidental damages based on this work; its use or interpretation by any individual, group, or organization; or on conditions beyond our control.